Selected Writings of Wilhelmina F. Jashemski

Wilhelmina Feemster Jashemski (1910-2007), historian and archaeologist, published the articles below in a variety of journals between the years 1963 and 1995. A Wikipedia entry, which has additional bibliography, describes her as "a pioneer of the field of garden archaeology in the ancient Mediterranean."

The Flower Industry at Pompeii, from *Archaeology*, Vol. 16, No. 2 (June, 1963), pp. 112-121, in 11 pdf pages.

A Pompeian Copa, from *Classical Journal*, Vol. 59, No. 8 (May, 1964), pp. 337-349, in 14 pdf pages.

The Caupona of Euxinus at Pompeii, from *Archaeology*, Vol. 20, No. 1 (January, 1967), pp. 36-44, in 10 pdf pages.

A Pompeian Vinarius, from *Classical Journal*, Vol. 62, No. 5 (Feb., 1967), pp. 193-204, in 13 pdf pages.

Excavations in the "Foro Boario" at Pompeii: A Preliminary Report, from *American Journal of Archaeology*, Vol. 72, No. 1 (Jan., 1968), pp. 69-73, in 8 pdf pages.

Tomb Gardens at Pompeii, from *Classical Journal*, Vol. 66, No. 2 (Dec., 1970 - Jan., 1971), pp. 97-115, in 20 pdf pages.

The Discovery of a Large Vineyard at Pompeii: University of Maryland Excavations, 1970, from *American Journal of Archaeology*, Vol. 77, No. 1 (Jan., 1973), pp. 27-41, in 18 pdf pages.

The Discovery of a Market-Garden Orchard at Pompeii: The Garden of the "House of the Ship Europa", from *American Journal of Archaeology*, Vol. 78, No. 4 (Oct., 1974), pp. 391-404, in 18 pdf pages.

The Excavation of a Shop-House Garden at Pompeii (I. XX. 5), from *American Journal of Archaeology*, Vol. 81, No. 2 (Spring, 1977), pp. 217-227, in 12 pdf pages.

"The Garden of Hercules at Pompeii" (II.viii.6): The Discovery of a Commercial Flower Garden, from *American Journal of Archaeology*, Vol. 83, No. 4 (Oct., 1979), pp. 403-411, in 13 pdf pages.

The Campanian Peristyle Garden, from *Ancient Roman Gardens*, Dumbarton Oaks Colloquium on the History of Landscape Architecture VII, edited by Elisabeth B. Macdougall and Wilhelmina F. Jashemski (Washington, D.C., 1981), pp. 31-48 and plates, in 47 pdf pages.

Preliminary Excavations in the Gardens of Hadrian's Villa: The Canopus Area and the Piazza d'Oro, by Wilhelmina F. Jashemski, Eugenia Salza Prina Ricotti, and John Foss, from *American Journal of Archaeology*, Vol. 96, No. 4 (Oct., 1992), pp. 579-597, in 20 pdf pages.

Roman Gardens in Tunisia: Preliminary Excavations in the House of Bacchus and Ariadne and in the East Temple at Thuburbo Maius, by Wilhelmina F. Jashemski, J. E. Foss, R. J. Lewis, M. E. Timpson, and S. Y. Lee, from *American Journal of Archaeology*, Vol. 99, No. 4 (Oct., 1995), pp. 559-576, in 19 pdf pages.

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The Flower Industry at Pompeii
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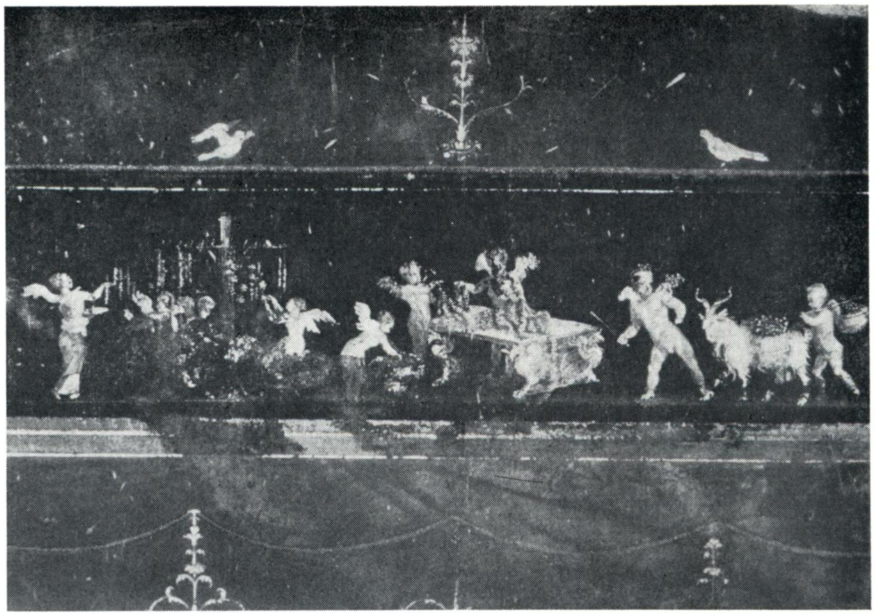


1. Flower dealers, from the House of the Vettii. At the right a gardener brings flowers to market on the back of a goat. A small boy trudges behind, his basket filled with flowers. Cupids make garlands which are displayed for sale on a wooden rack.

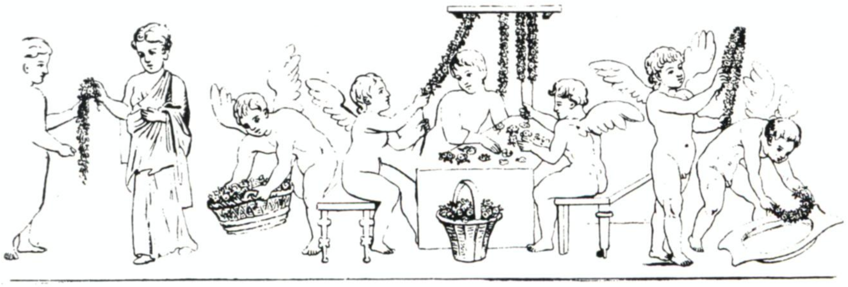
The Flower Industry at Pompeii

By **WILHELMINA F. JASHEMSKI**

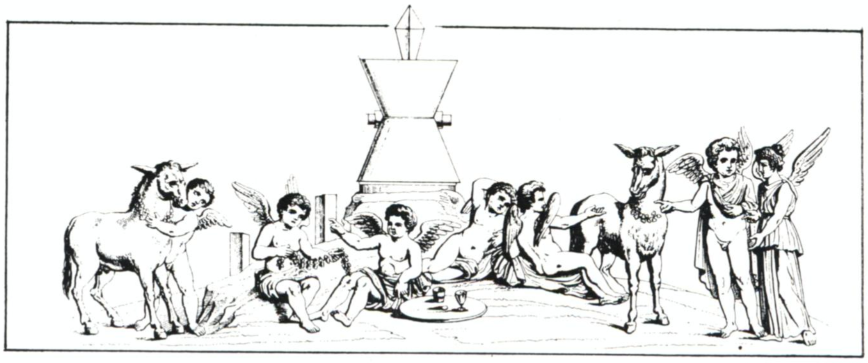
FLOWERS PLAYED AN IMPORTANT PART in the life of the ancient Romans. They were much in demand for festivals, banquets, birthdays, weddings, games and funerals. A garland was the proper gift to honor not only the gods but also the living and the dead. Guests at dinner parties were presented with garlands, while at sacrifices priests, assistants, victims and altars were all decked with flowers. As a result, the cultivation and sale of flowers was an important business. Pompeii, which is slowly yielding the secrets of so many aspects of economic life in Roman times, has valuable information to offer on this subject.

Pompeii lies in the fertile volcanic plain of Campania, which was the center of flower cultivation in ancient Italy. Ancient writers speak extravagantly of the beauty of the Campanian plain, the fertility of its soil—it yielded as many as four crops a year—and the popularity and fragrance of its flowers. The geographer Strabo calls it "the most blest of all plains" (5.4.3). Pliny the Elder, who was stationed across the bay from Pompeii, rhapsodizes over the "blissful and heavenly loveliness" (*Natural History* 3.40) of Campania and speaks of its famed roses. Florus praises the flowers of Campania and calls it "the fairest of all regions, not only in Italy, but in the whole world" (*Epitome* 1.16.3).

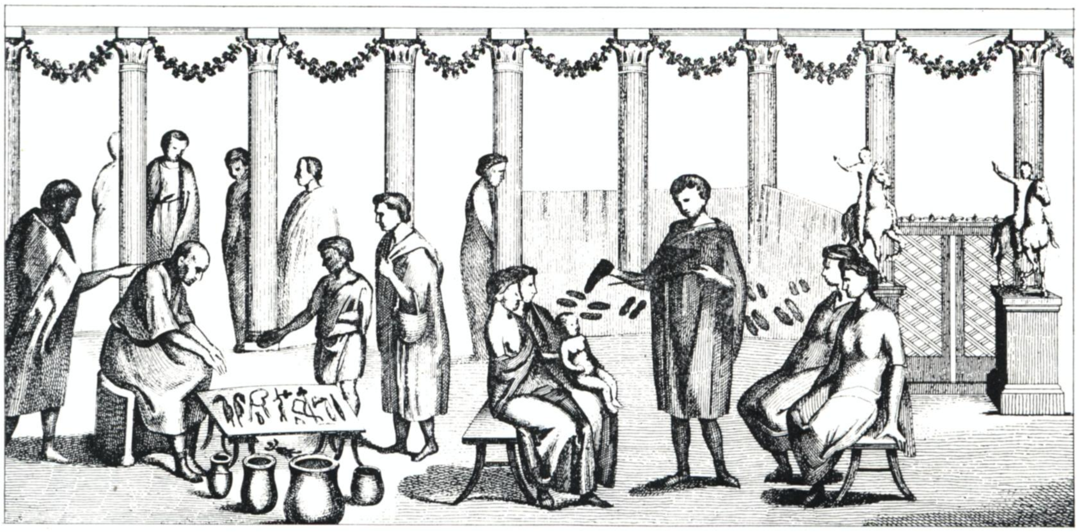
We can learn much about the economic life of Pompeii from its mural paintings. Some of those preserved in shops show scenes from daily life—the fuller treading clothes in a vat, the felter at work in his shop, weary travelers eating and drinking in a tavern, wine being delivered in large amphoras.



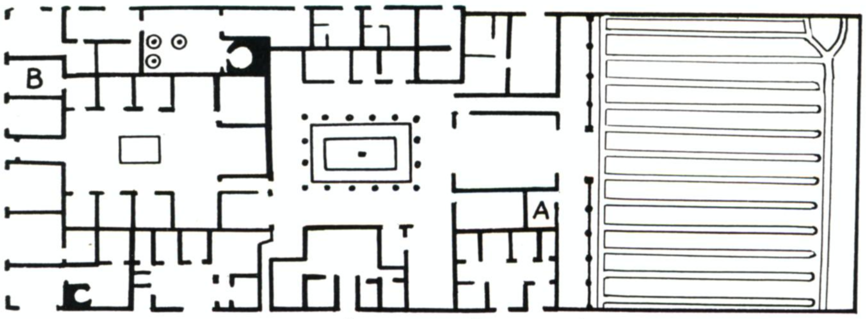
2. Flower dealers, from the House of the Calpurnii. This house, located near the Temple of Apollo to the west of the Forum, was excavated before the time of photographic records, but fortunately this drawing was made before the painting disappeared. *Archäologische Zeitung* 1873, plate 3, 2a.



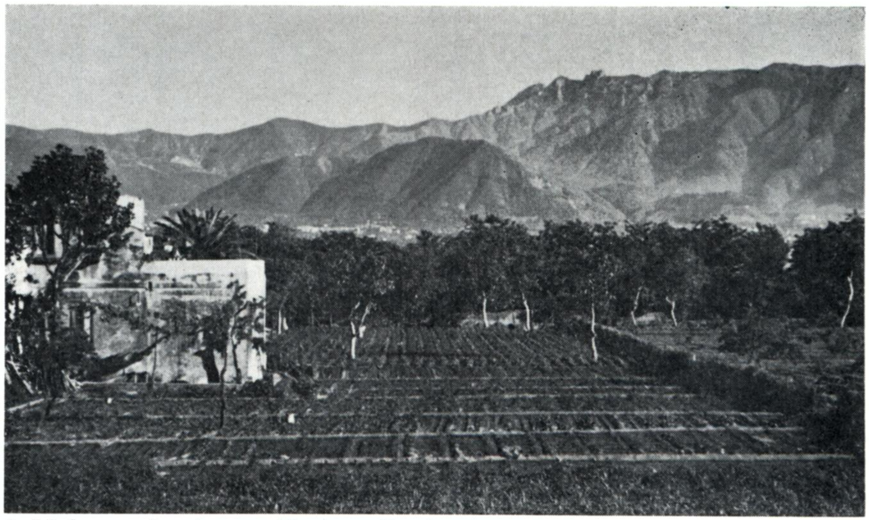
3. The Vestalia, painting from the Macellum. Cupid bakers celebrate the festival of Vesta, patron goddess of bakers. Ovid, describing this festival, says: "Behold, the bread will hang from the neck of the wreathed donkeys and flowery garlands hide the rough mills" (*Fasti* 6.311-312). This picture is no longer in existence. Jahn, *Handwerks und Handelsverkehrs* (1868), plate VI.4.



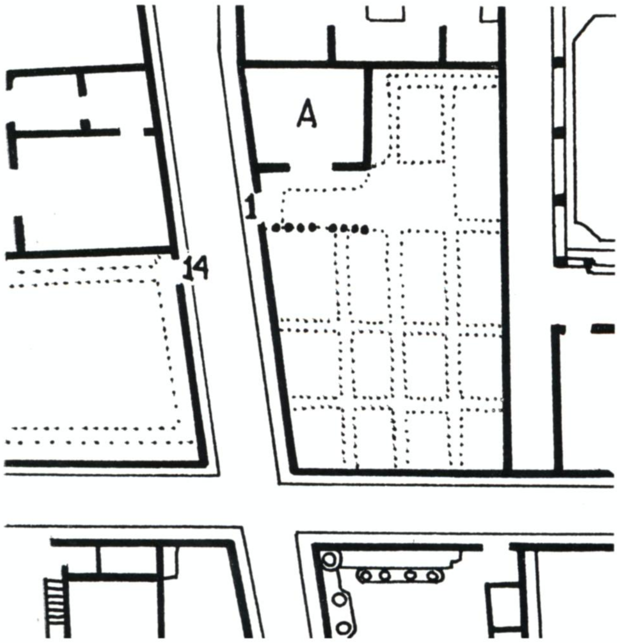
4. The Forum decorated with garlands on market day. The shoemaker and the food seller have set up portable stands. Twelve paintings of the Forum were removed from the villa of Julia Felix, which was excavated and reburied 1755-1757, re-excavated 1952-53. The pictures are in the Naples Museum. Jahn, *op. cit.,* plate II.2.



5. Plan of the house and garden of Pansa. Garden plots about eight feet wide are separated by paths used also as irrigation channels. The gardener, who probably occupied room **A**, may have sold produce from the large garden as well as from the owner's estates in the front shop **B**, connected with the house. Plan of house from *Corpus Inscriptionum Latinarum,* IV. Plan of garden from Mazois, *Les Ruines de Pompéi,* Vol. II, plate XLII.



6. Modern garden, just outside the walls of ancient Pompeii. It is laid out exactly as in the House of Pansa and as recommended by Pliny.



7. Plan of plant nursery, with plots and paths as recorded at the time of excavation. The gardener's quarters **(A)** are near the entrance **(1)**. A row of broken amphoras in which seedlings were grown is near the entrance. The owner of the neighboring garden **(14)** had a source of plants near at hand. Plan from *CIL,* IV.

Flower Industry continued

Wealthy Pompeians, however, decorated their homes with more poetic representations, substituting Cupids and Psyches for the toiling workers. The historian Rostovtzeff believed that these wall paintings depicted the business in which the householders were engaged. The best known pictures of this type are those in the House of the Vettii, where various scenes illustrate the wine business, which the archaeologist Della Corte proved was an important source of income from farms owned by this family. It is likely that the Vettii also raised flowers commercially, for in addition to paintings of Psyches gathering flowers, there is a delightful picture of Cupids and Psyches as flower dealers (Figure 1). A similar painting was found in the House of the Calpurnii (Figure 2).

A thriving business in garlands and wreaths went on at Pompeii. Many wall paintings show garlands used as decorations in homes, shops (Figure 3), temples and even the Forum (Figure 4). The shrines of household gods were decorated with garlands three times each month. Many shrines have garlands painted on them. On one altar hooks for holding real flowers are still in place.

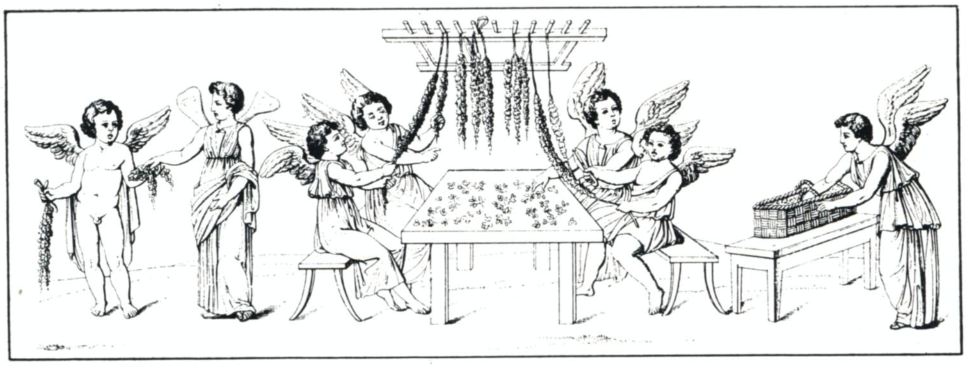
We can be fairly sure what kinds of flowers were used for garlands at Pompeii, since Pliny the Elder gives us an extensive description. In the twenty-first book of his *Natural History* Pliny tells a delightful story to explain how flowers came to be used in this way. At first branches of trees or leaves were used, then the custom of using flowers "began at Sicyon through the skill of Pausias, the painter, and of the garland-maker Glycera, a lady with whom he was very much in love. When he copied her works in his paintings, to egg him on she varied her designs, and there was a duel between Art and Nature."

According to Pliny, the Romans favored three kinds of flowers for garlands—the rose, the lily and the violet, in that order. The most famous roses were those of Campania and of Praeneste. Second only to the rose was the white, or madonna lily *(Lilium candidum)*. "Next in esteem come the violets, of which there are several kinds, the purple, the yellow, the white." According to Pliny, the purple violet was a wild variety, while the most highly esteemed cultivated violet was yellow. The Roman term *viola* included not only our violet but also the stock and gillyflower, and perhaps our viola.

Among other flowers used to add variety to garlands, Pliny mentions the yellow blossoms of the *genista* or greenweed (*Genista tinctoria* or *pilosa*), a relative of the broom, which today covers the walls of Pompeii with masses of gold in the springtime. Oleanders *(Nerium oleander)*, still popular at Pompeii, were also used, as was the *cyanus* or bachelor's button *(Centaurea cyanus)*, the amaranth or cockscomb *(Celosia cristata)* and the cyclamen. There was also the *caltha* (perhaps the pot marigold, *Calendula officinalis*) and various meadow flowers that are difficult to identify.

Ivy garlands are painted on many Pompeian walls. Melilot was known as "Campanian garland" because the plants grown there had short and very fleshy leaves that made them highly desired for garlands. Wild marjoram, thyme, day-lily leaves *(hemerocalles)*, mint and other foliage added variety.

Garlands varied according to the season. At Pompeii violets were the first of the favored flowers to bloom, then roses which were so anxiously awaited that growers forced them by pouring warm water around the roots. Roses were still in bloom when lilies appeared. In August the amaranths came out and lasted until autumn. Although this flower was raised in



8. Flower dealers, from the Macellum. The presence of this painting in the market probably indicates that flowers were sold there. Jahn, *op. cit.*, plate VI.5.

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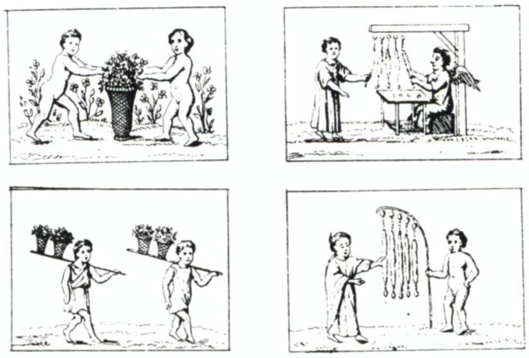
Flower Industry continued

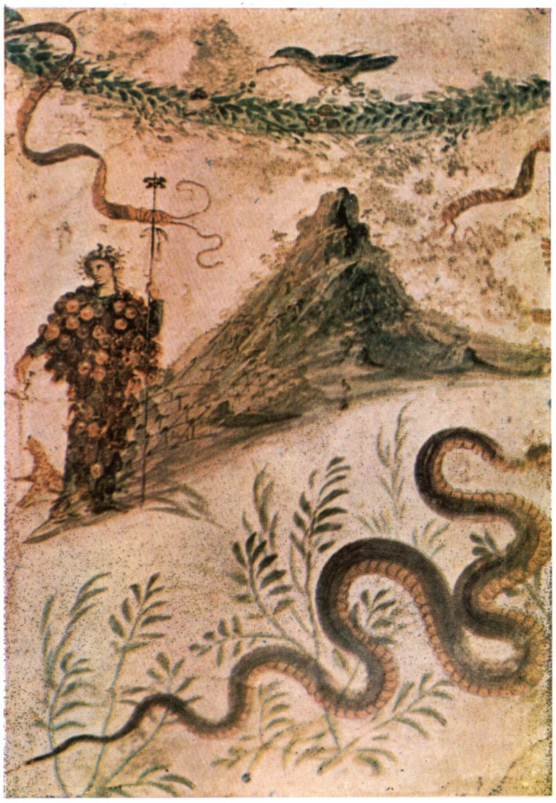
Italy, those grown at Alexandria were especially prized because of their durability, and they may have been imported, for Pompeii had close commercial contacts with Egypt. Pliny says that the amaranth revived when moistened, which made it ideal for winter garlands. Artificial flowers made of dyed flakes of horn were used when fresh flowers were not available. Evergreen garlands were likewise popular in the winter, and *vicapervica* (periwinkle) was a favorite, as Pliny tells us.

THE QUESTION naturally arises as to where the flowers sold in Pompeii were raised. Flowers had long been a profitable side crop for farmers living near a city. As early as the second century B.C., Cato in his handbook on agriculture advises his readers that if their farm is "near a town, it is well to have a garden planted with all manner of vegetables, and all manner of flowers for garlands" (8.2). The erudite Varro suggests that "it is profitable near a city to have gardens on a large scale: for instance of violets and roses and many other products . . ." (1.16.3). Columella devotes an entire book of a sophisticated treatise on agriculture to the layout of the garden and various plants to be grown. He tells how the farmer piles his basket high with roses and *calthae* and returns from market "soaked with wine, with staggering gait, and pockets full of cash" (10. 309-310).

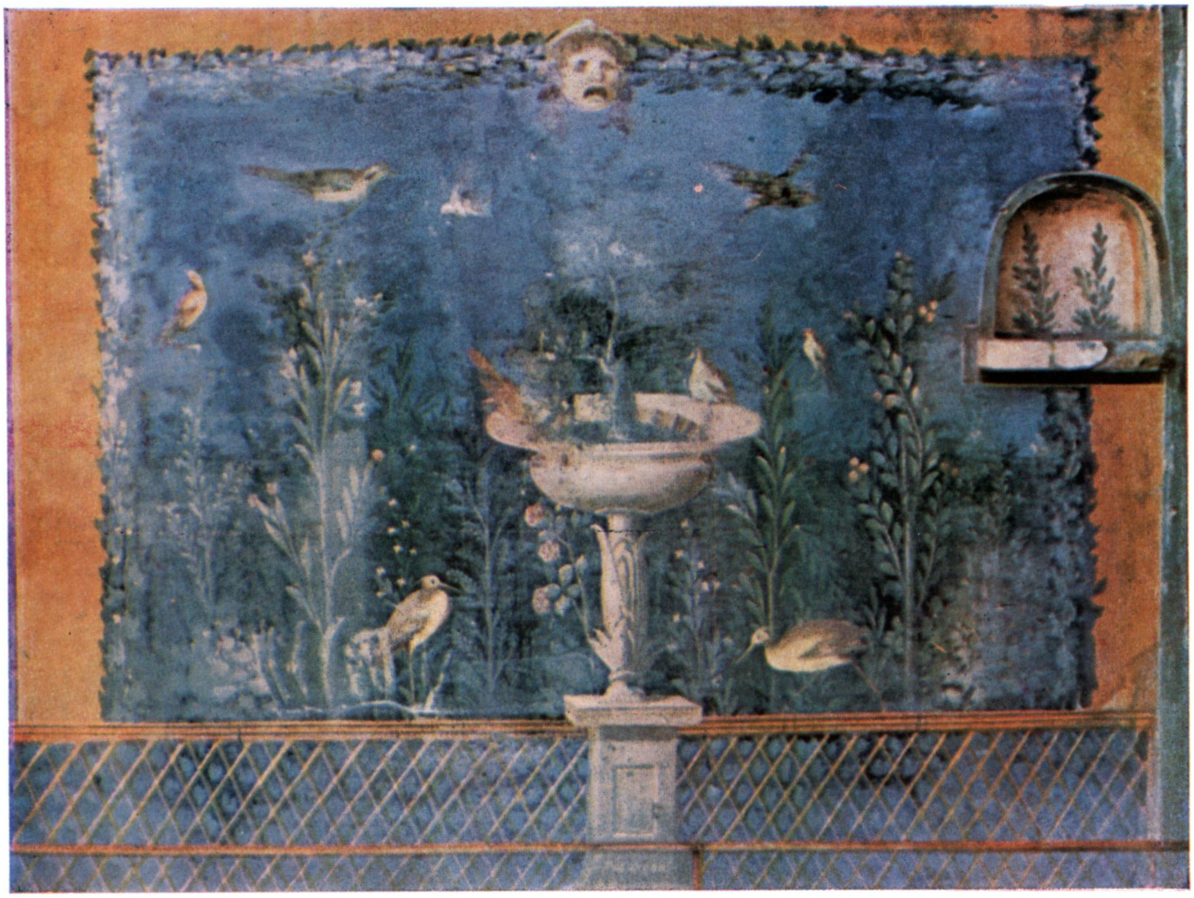
Some of the flowers sold at Pompeii were probably raised by the owners of rustic villas, while others were grown in small plots not connected with a villa. Some flowers were probably raised within the city itself, for many large homes had substantial gardens. For example, the House of Pansa, which covers most of an *insula,* or block, has a garden 87 x 100 feet which takes up almost a third of the *insula.* From an examination of this garden today, it is difficult to tell much about its original use, for almost since the time it was excavated (1813-1827) it has again been under cultivation. Fortunately, how-



9. Four pictures of flower dealers, found in 1704 on the ceiling of a burial chamber near the church of S. Stefano Rotondo, in Rome. Note the peddler who carries his garlands on a curved pole. Jahn, *op. cit.,* plate VI, 7, 8, 9, 10.



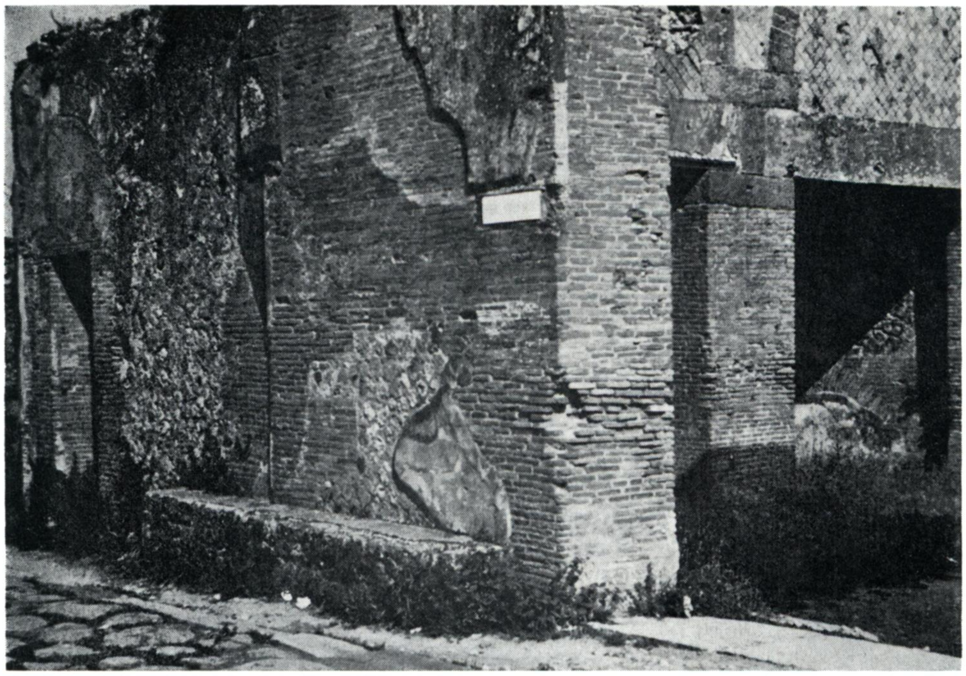
10. Lararium painting, from the House of the Centenary. Although the household shrines were decorated with fresh garlands three times each month, many had painted garlands as well. Here flowers and leaves appear to be stitched upon a band, perhaps the interior bark of the linden tree *(philyra).* Horace preferred the plain myrtle garland, easily made at home, to the elegant product of the professional garland maker who sewed flowers on the *philyra.*



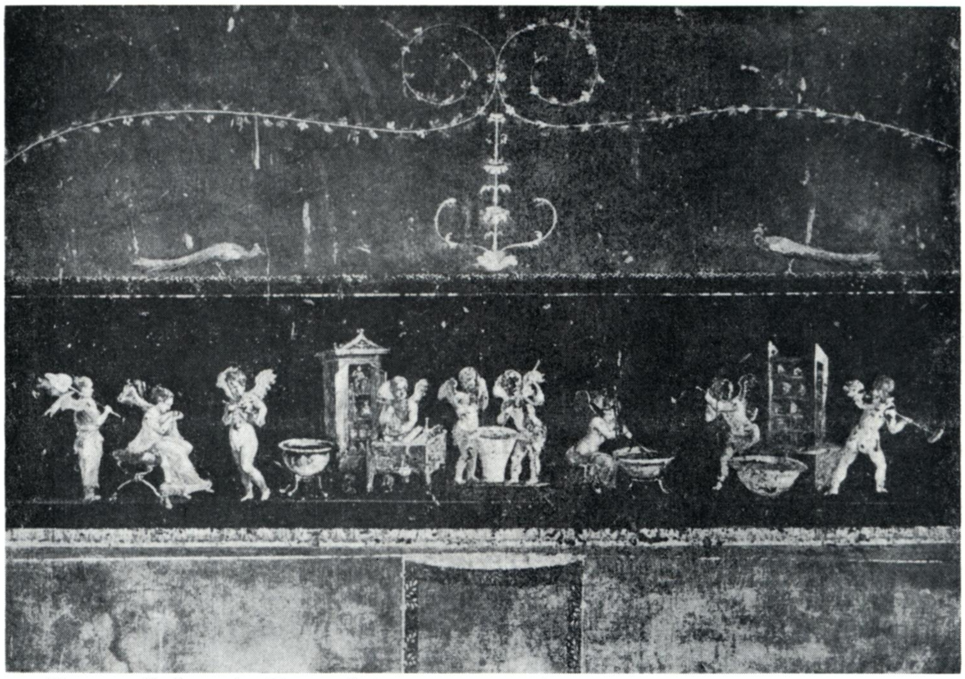
11. Garden painting, from House of Venus Marina (detail). Beyond a painted fence are pictured flowers, bushes and birds.

ever, the French scholar Mazois made a plan at the time of excavation (Figure 5) noting that the garden was systematically laid out in rectangular plots separated by paths which were used also as irrigation channels. The planting arrangement was clearly that of a produce garden and not a pleasure garden, although flowers would normally have been included. The layout is precisely that recommended by Pliny for a farmhouse garden (19.60). He gives directions for marking out the plots and bordering "these with sloping rounded banks, surrounding each plot with a furrowed path to afford access for a man and a channel for irrigation." According to Mazois' plan, the garden in the House of Pansa was laid out in plots about eight feet wide, exactly the same as in present-day gardens at Pompeii (Figure 6).

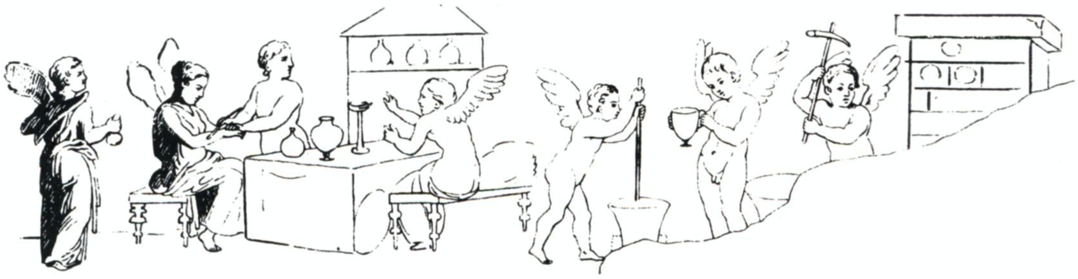
Even a plant nursery has been found in Pompeii. Located near the heart of the city, two blocks from the Forum and one short block off the busy Via dell'Abbondanza, the area of the nursery was divided into plots by furrows (Figure 7). Amphoras whose tops had been broken off were filled with soil and sunk into the ground, and in these seedlings were started. The gardener—whose humble quarters were at the edge of the plot—no doubt furnished plants to landscape the gardens which were such an important feature of Pompeian houses. The nursery occupied land that had been cleared after the earthquake of A.D. 62, which damaged or destroyed most of the buildings of Pompeii. Numerous vacant lots created by earthquake damage may have been converted profitably to flower or vegetable gardens.



12. Headquarters of the *unguentarii.* In one of the electoral notices put up by the perfumers, who were backing Modestus for aedile, they were joined by the *pauperes,* the beggars who sat on the bench beside the stairway—today a favorite resting place for weary tourists.



13. *Unguentarii,* from the House of the Vettii. Oil is being made on the press at the right. It is stirred as it is heated; other ingredients are added and the finished product is ready to be weighed and sold. A seated customer tests a sample on the back of her hand.



14. *Unguentarii,* from the House of the Calpurnii. A clerk rubs perfume on the back of the customer's hand, while a maid holding a money bag stands waiting for her mistress to make a selection. The drawing was made before the picture disappeared. *Archäologische Zeitung* 1873, plate 3, 2b.

Flower Industry continued

One wonders which of the numerous little shops throughout the city were flower shops. It is easy to detect a bakery, a fullery or a dye shop, while wares finished and unfinished betray the shop of the gem cutter, the marble sculptor, the furniture maker and the maker of tools. Since no wood is preserved at Pompeii, however, it is hard to identify a flower shop, whose distinguishing feature was the rack on which garlands were displayed. A painting on a wall of the Macellum showing Cupids and Psyches as flower dealers (Figure 8) indicates that garlands were probably sold in this large market. Some of the shops attached to grand houses may have sold garlands made of flowers produced at the owners' villas, and made by their slaves or freedmen. T. H. Dyer, writing on Pompeii at the end of the nineteenth century, noted that "the produce of the farms of the modern Italian nobles is still vended in the same way, in a small room, on the ground floor of their palaces."

From the wall paintings, too, we learn how a garland shop looked. Its furnishings were simple—a table and benches, and a rack on which to hang the finished garlands. In one painting a worker appears to be freshening a garland in a basin of water.

Garland sellers were probably among those who on market day set up portable stands in the Forum or on one of the main streets of Pompeii. Inscriptions from Rome refer to garlands sold in booths along the Sacred Way and to a candle and garland shop operated by two freedmen. In one of four pictures illustrating the flower business (Figure 9), a flower peddler is displaying his wares to a customer.

We do not know exactly how ancient garlands were made. Pliny dismisses this matter with the remark that he won't "put garlands together—for that would be mere trifling," that is to say, there is no point in giving directions for making garlands, because that is something his readers know well. He does say, however, that flower garlands were called *serta,* from the verb *serere,* to weave together or to plait, and he says that sometimes several kinds of flowers were woven together. This is a difficult passage to interpret, but it seems that strings or festoons of flowers were made into rings which were linked together, and the resulting chain then coiled or looped in an elaborate fashion. (Pliny, as he says, is not giving instructions!) Garlands were sometimes made by stitching together rose petals, while in other cases flowers or foliage were attached to bands (Figure 10).

The ancient garland was not unlike the Hawaiian lei, which originally had religious significance but today is offered as a gracious welcome to visitors, and these may throw light on the way ancient garlands were made. Some leis are made of single blossoms strung together; others are elaborately plaited. The open stalls of the lei sellers are also reminiscent of the Pompeian flower shops; passers-by can watch the Hawaiian girls plaiting the leis that they offer for sale, just as in Pompeii they may have stood and chatted with the garland makers.

For the appearance of ancient flowers we are fortunately not dependent upon literary description alone. The Pompeians decorated their walls with the same flowers that grew in their gardens, and the size of the garden was frequently extended by a painting on the garden wall (Figure 11). In these we see the ever-present oleander, as well as the rose, viola, myrtle, laurel, ivy and many other plants. In one unique ceiling painting individual lilies, bachelor buttons, roses and other flowers are scattered at random on a dark background.

Closely associated with flower culture was the production of honey. Fortunately many of the

Flower Industry continued

flowers that were raised for garlands produced excellent honey, which was the only sweetening the Romans knew and which, as Pliny points out, was "a source of very great profit at slight expense" (21.41). Perhaps it is significant that an amphora of thyme honey was found in the House of the Calpurnii, a family that apparently engaged in the flower business.

Another aspect of the flower industry at Pompeii was the making of perfumes and unguents. The reputation of Campanian perfume, especially that of the rose, was widespread. Pliny says that the fields of Campania, after bearing three crops during the year, in the spring when "allowed to have a moment's repose . . . produce a rose with a sweeter scent than the garden rose . . . hence there is a common saying that the Campanians produce more perfumes than other countries do oil" (18.111). Elsewhere Pliny says "Egypt is of all countries in the world the best adapted for the production of unguents, but Campania with its abundance of roses runs it close." (13.26).

More is known about the perfume trade at Capua than elsewhere in Campania. Inscriptions from there record several *unguentarii* or *thurarii,* but none of them mentions a guild of perfumers.

Pompeii's perfume industry is not so well known, but there are two inscriptions (*CIL* IV.609; Della Corte, *Case ed abitanti di Pompei,* no. 340) which attest the presence of *unguentarii.* Both are election notices in which the *unguentarii* gave their support as a group to a specific candidate in the municipal elections. Della Corte made a careful study of the electoral notices painted on the walls of Pompeii and succeeded in locating the homes and places of business of many of its inhabitants. Since the electoral notices of the perfumers were painted on the outside wall of the Macellum, beside a stairway leading to second-story shops, Della Corte concluded that the headquarters of the guild of perfume manufacturers and sellers were in the two northern upstairs shops of this building, facing the Forum (Figure 12).

15. Perfume bottles *(unguentaria)* of blown glass which were found in the excavations at Pompeii.

With the exception of an otherwise unknown *unguentarius* named Phoebus (*CIL* IV.2184), no names of the individuals engaged in the perfume business are known at Pompeii, unless we assume with Rostovtzeff that the picture of perfume-making on the wall of the House of the Vettii (Figure 13) shows that they engaged in this business. Another such picture was found in the house of the Calpurnii (Figure 14).

Pliny gives the general recipe for making unguents. There are "two ingredients, the juice and the solid part, the former of which usually consists of various sorts of oil, and the latter of scented substances. . . . A sprinkle of salt serves to preserve the properties of the oil. . . . Resin or gum is added to retain the scent in the solid part, as it evaporates and disappears very quickly if these are not added." (13.7). There were many variations of this basic recipe. Pliny's recipe for rose perfume used as a base *omphacium,* an oil or juice made of unripe grapes or olives, which was preferred because it was less greasy than olive oil. To this rose blossoms, oil of roses and saffron blossoms, cinnabar, reed, honey, rush and wine were added. Other recipes used olive oil, the expensive balanos oil, made from the behen nut, and sweet almond oil.

According to Pliny (13.9), rose was the scent most widely used. One wonders if the iris pictured on many wall paintings at Pompeii was also raised for perfume. For this the root and not the blossom was used. Pliny mentions a laurel perfume in which lilies, marjoram, myrtle oil, oil of roses, olive oil and other ingredients were used.

In 1929 the careful examination of the subsoil in a shop excavated a century earlier yielded portions of an oil-press sufficient for reconstruction. One cannot help but wonder whether this press, found just a few doors from the headquarters of the perfumers, might not have been set up to furnish oil for them. The idea becomes more plausible when we realize that this is the only oil press thus far found in the city, and that oil presses are usually found near where olives are produced. It was cheaper to transport the oil than the olives.

The last step in the perfume business, the bottling and retailing of the product, is illustrated in both of the pictures with Cupids and Psyches. Pliny advises bottling perfume in alabaster or lead containers and storing it in the shade. We know, however, that glass containers were also used (Figure 15).

ANY DISCUSSION of the flower industry would be incomplete without mention of the extensive use of flowers in medicine. Again Pliny is our best source. He tells us that the rose was an important ingredient in many medicines, for example, in a salve for the eyes which was highly esteemed (21.15). Salvia, portulaca (purslane) and aster were among the plants raised for their medicinal value.

We do not know whether Pompeii exported flowers and their products, but we know that it did a thriving import and export business. Martial tells us that Campanian roses were popular at Rome, as was "Campanian garland." Pliny speaks of fashionable stitched crowns made from the leaves of foliage imported "from India or even beyond," and such luxuries may have been enjoyed by some of the wealthy Pompeians, for there is evidence that Pompeii had contacts with India.

In studying the ancient flower industry at Pompeii I discovered that an important flower industry exists in modern Pompeii as well. Vesuvius continually enriches the land: the last eruption (March 1944) sprinkled volcanic ash to a depth of almost twelve inches over the surrounding countryside. The rich soil yields at least three crops a year, as it did in antiquity, although irrigation is still necessary, and water is expensive. Cauliflowers are ready for the market by the end of January or February; the same plot may then be planted in potatoes, which mature in two and a half months. Finally, flowers are planted, and these mature in three or four months. Frequently land is sublet in smaller areas for the portion of the year when flowers are raised. Although many flower plots are five to ten acres in size, some are as small as a quarter of an acre. Flowers are also planted in orchards under the trees, just as they were in antiquity.

But the flowers that are grown in Pompeii today are neither for garlands nor for perfume; they are grown for seed. One company has a total of 250 acres under contract within a three to five-mile radius of Pompeii. Large seed companies with headquarters in France, England, Holland, Germany and Denmark have a total of one thousand acres of flowers under contract. Varieties grown with great success are the pansy, marigold, salvia, aster, portulaca and zinnia. Many of these flowers were known in less developed varieties by the ancient Romans. Among other flowers grown for seed at Pompeii, but in lesser amounts, are the amaranth and the bachelor button, whose humbler ancestors were favored by the Romans for garlands. The modern Pompeian is still finding the advice of Cato very sound—flowers can be a very profitable crop.

In antiquity, Campanian melilot and roses were exported throughout Italy. Today the market is wider, for the flower seed raised at Pompeii is planted throughout the world!

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Photographs by Stanley A. Jashemski

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A POMPEIAN COPA

"Come then, and rest your weary self beneath the shady vine. . . ."

THE COPA, A DELIGHTFUL little poem found in the *Appendix Vergiliana,*[1] takes its name from the Syrian copa, or hostess, who invites the traveler to stop and enjoy the various pleasures of her inn. She paints a charming picture of a landscaped garden with vine-covered arbors and a gurgling brook, and promises cooling drinks in crystal goblets, little cheeses, waxen plums, chestnuts, bright red apples, and ripening grapes, as well as the music of flute and strings.

The authorship of this short poem of nineteen elegiac couplets has been much discussed by scholars. Servius (A.D. 400) included it among the works of Vergil, a fact which no doubt did much to insure its survival during the Middle Ages. The meter, style, diction, merit, and sources of the poem have been studied and analyzed in detail, but no agreement has been reached. The tradition of Vergilian authorship has its followers. Mackail[2] concluded that the poem was "so singularly unlike the Vergilian manner as to tempt one into the paradox of its authenticity," but others consider this "elegy bubbling over with the joy of life, too cheerful"[3] to be ascribed to Vergil. Because of the many Greek words in the poem, and the passages similar to those found in Theocritus, the *Copa* has seemed to some scholars to picture a scene lifted directly from the pages of Hellenistic literature.[4]

It is true that the Syrian copa's inn is very different from those normally described by Latin writers, who refer to such places as dirty, smoky, black, and disreputable.[5] Fortunately, however, we are not dependent on such casual literary references for our knowledge of Roman inns and restaurants. Archaeological evidence should also be considered. The excavations at Pompeii, which are slowly yielding the secrets of many aspects of social and economic life in Roman times, have important information to offer on this subject.

Even the most casual visitor to Pompeii is aware of the provisions made for buying food and drink in this ancient city. Scarcely a corner is without its quick-lunch counter or bar. The prevalence of wine-shops may be due to the foresight of the local wine producers in providing outlets for their product, for Pompeii was an important wine center, and much of the wine sold in the city came from nearby villas where it was

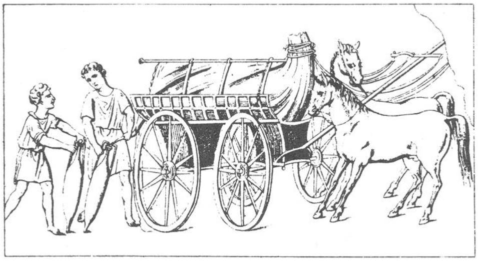

FIG. 1. DELIVERING WINE

Painting found in tavern VI.x.1. From *Real Museo Borbonico,* V,48.

produced. Some, however, was imported from greater distances. A wall painting found in a tavern shows wine being delivered in a large skin mounted on a wagon (Fig. 1).

Pompeii was a commercial city that enjoyed a large import and export trade. Merchants and tradesmen who came from great distances as well as from the surrounding countryside could find lodging and food in the many inns and restaurants in the city. Of course when wealthy people traveled they usually stayed at one of their own villas or put up with friends who had quarters for guests in their large houses.

A study of the restaurants and inns in Pompeii shows that many were humble, little more than a shop with a street counter, occasionally with a dining room; smaller inns had only a few rooms to let for overnight guests. Paintings found on the walls of two taverns give a colorful picture of the life in these taverns.[6] In one picture, disagreement over a game of dice has erupted into a fight and the distraught tavern keeper is shown pushing out the gamblers as he tells them: "Get out. Do your quarreling outside!" (*CIL* 4.3494 i). In the cheaper, poorer inns and taverns customers who did not stand at the street counter were served at tables in dark and smoky rooms. In another painting four men, two wearing the pointed hood of the traveler, are sitting on stools about a table (Fig. 2). This is the sort of place that Martial disparagingly refers to (5.70.3) as "an eating place with stools," and in the same epigram he taunts the boor who does not recline to eat.

The people of ancient Pompeii, just as the modern Pompeians, liked to eat outdoors. Many homes had gardens, in which can still be seen the masonry couches on which the diners reclined as they ate.[7] The couches, made comfortable of course with mattresses and pillows, were frequently shaded by a vine-covered arbor, sometimes by an awning. Even travelers could enjoy eating in a garden, for in many inns and taverns in Pompeii the garden was an important feature, just as it was in the Syrian copa's inn. Kleberg, in his valuable study, *Hôtels, restaurants et cabarets dans l'antiquité romaine,* has listed the hotels, inns and restaurants at Pompeii which had been published at the time he wrote. But he does not mention the presence of gardens, nor consider the role of the garden in these places. Before dismissing the Syrian copa's inn as a Hellenistic anachronism, it might be well to examine the archaeological evidence at Pompeii.[8]

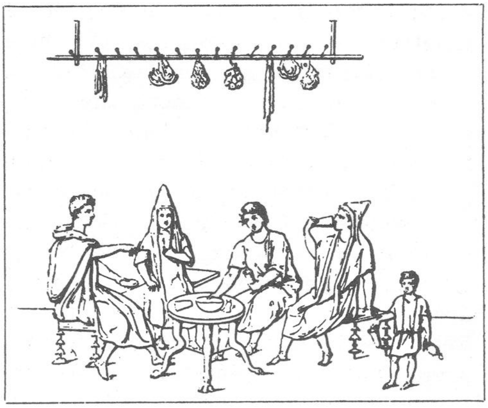

FIG. 2. TAVERN SCENE

Painting found in tavern VI.x.1. From *Real Museo Borbonico,* IV,A.

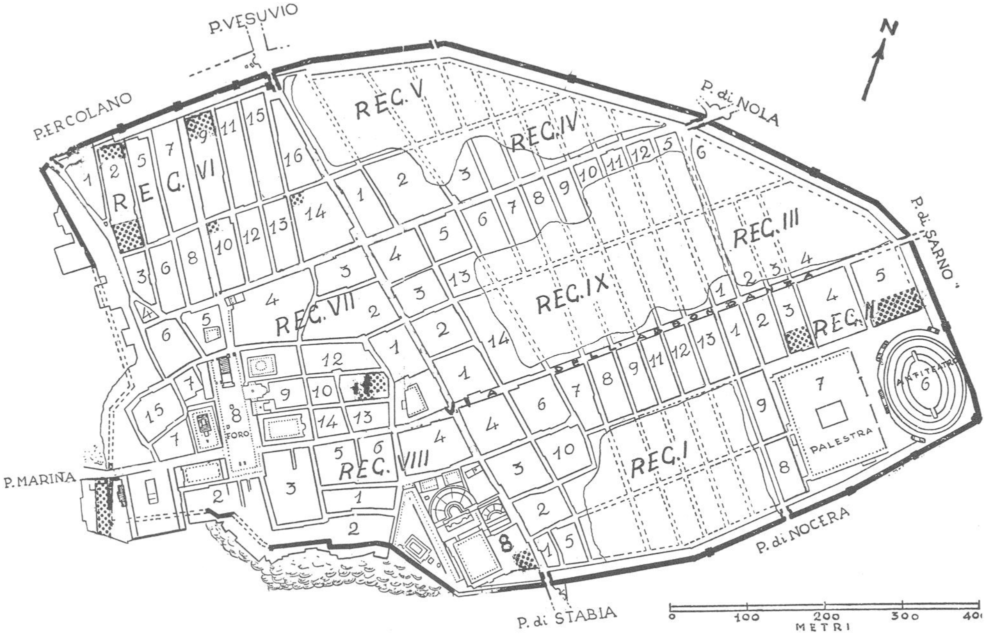

FIG. 3. PLAN OF POMPEII

Hotels and taverns mentioned in the article are indicated by dotted areas. The locating of any building in Pompeii was made easy by the system introduced by the archaeologist Fiorelli, who became Director of the excavations in 1860. He divided the city into nine regions; each region was subdivided into numbered *insulae*, or blocks, and each entrance in each *insula* was assigned a number. Thus each door has an address of three numbers.

Visitors arriving at Pompeii from Herculaneum or Neapolis found a small but pleasant inn (VI.i.1) just inside the city gate, almost tucked beneath the city wall (see location on Plan, Fig. 3). Here travelers might pause and enjoy refreshment as they ate outdoors, reclining on the cushioned triclinium, whose masonry couches still exist. A vine-covered pergola furnished welcome shade.[9] This little inn also had an indoor dining room, and upstairs rooms for overnight guests (Fig. 4).

If a traveler preferred something more pretentious he found one of the most elegant hotels (VI.ii.4) in the city a block farther down the street. The manager of this hotel was Aulus Cossius Libanus, apparently a man of Jewish origin.[10] The hotel over which he presided was a magnificent old Samnite dwelling which had been converted to commercial usage, as so frequently happened at Pompeii (Fig. 5). In this case only minor, but significant

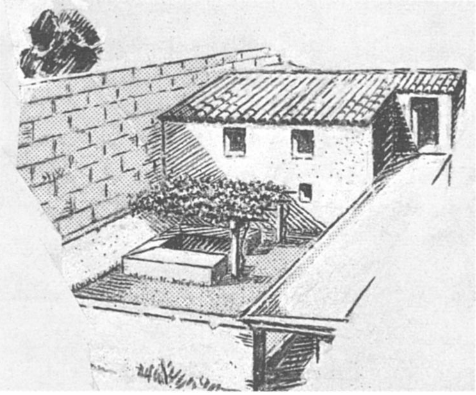

FIG. 4. SMALL INN

Reconstruction of VI.i.1. Drawing by Rudolph Bianconcini.

changes had been made to transform this fine home into a *hospitium* and restaurant.[11] A shop (3 on plan) at the left of the entrance sold food and hot drinks to passersby on this heavily traveled street, as well as to guests at the hotel. It is noteworthy that the principal counter faces not the street, but the fauces of the house. At the end of the counter is a place for heating a container over a fire. There is a stone table in the middle of the room. A bakery was conveniently located next door. Guests who preferred to eat more leisurely and graciously might be served in the large indoor triclinium (13 on plan) or in the open-air triclinium[12] (25 on plan) in the garden at the rear of the house.

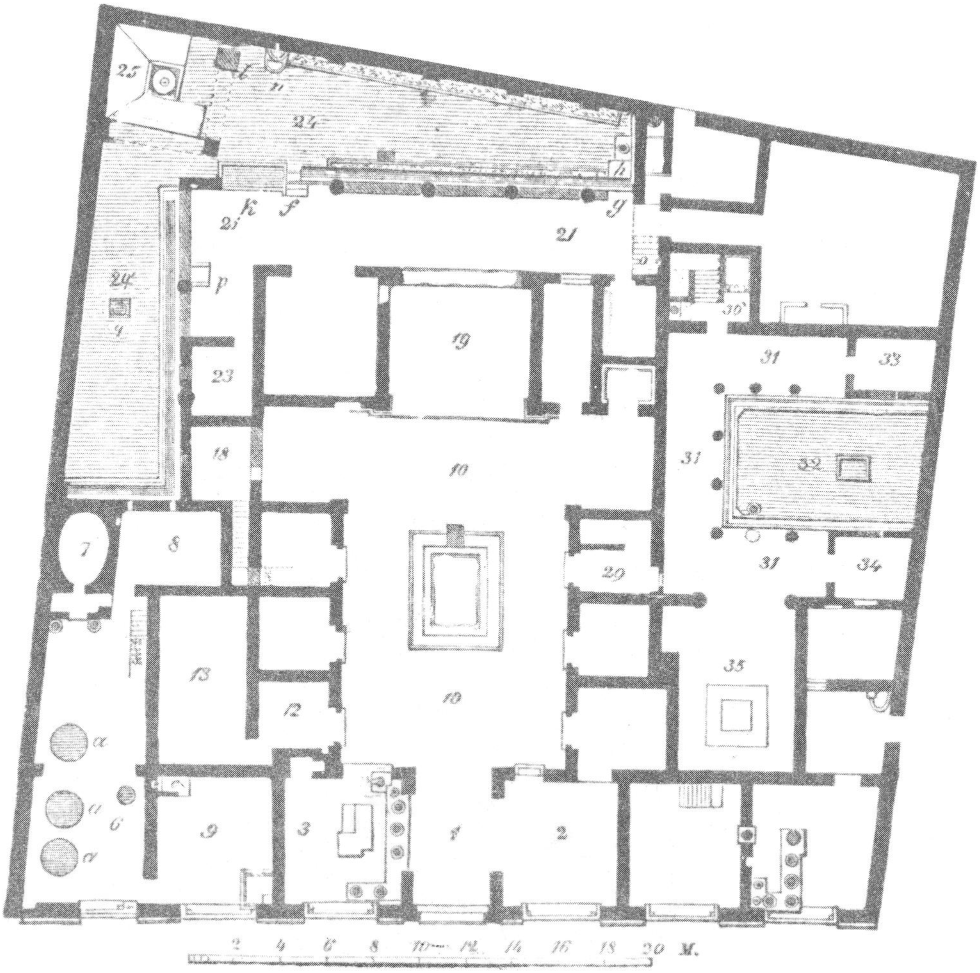

FIG. 5. HOTEL OF A. COSSIUS LIBANUS

Plan of VI.ii.3-5. Based on Mau, *Pompeii* (1902), fig.134.

1: Fauces. 2,3: Shops. 6-9: Bakery. 10: Atrium. 12: Anteroom leading to dining room (13). 19: Tablinum. 21: Colonnade opening on the garden (24,24'). 25: Garden triclinium. 31-36: Private apartment of hotel manager.

This house is still erroneously known to tourists as the "House of Sallust," even though as early as 1875 Fiorelli *(Descrizione di Pompei,* p.83) had identified the owner on the basis of the seal reading A. Coss(ius) Liban(us) which had been found in the house.

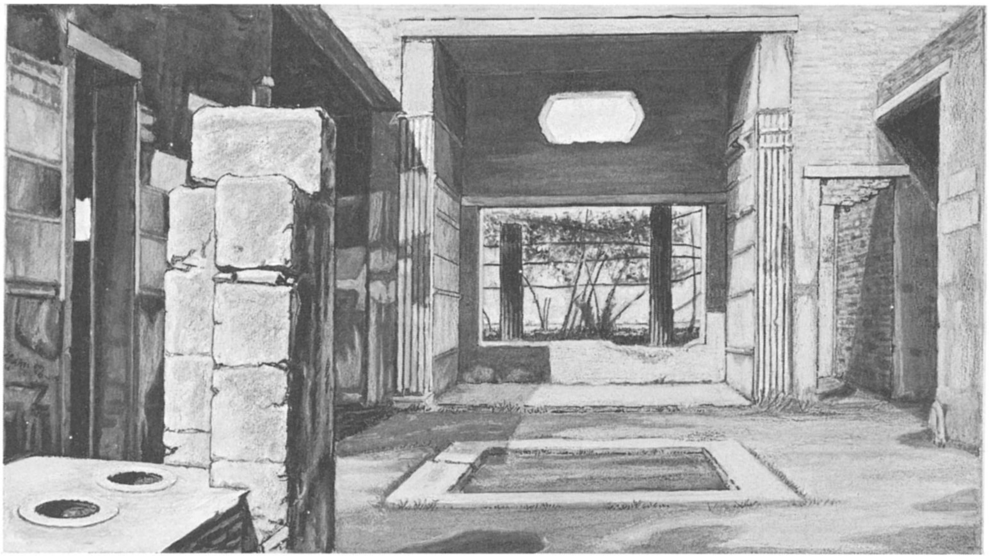

FIG. 6. HOTEL OF A. COSSIUS LIBANUS

Appearance today. Drawing by Rudolph Bianconcini.

The garden, which could be seen through the large picture window of the tablinum (Fig. 6), beckoned invitingly to the customer the moment he stood before the street counter or entered the house. Even the low-growing flowers were clearly visible, for the level of the garden was three steps higher than the floor of the house. It could be entered at either end (f, g on plan) from the colonnade. The garden was not large: the back part was less than twenty by seventy feet, the north portion still smaller. Such a garden had little room for trees or even large shrubs, but boxes along the edges of the garden were planted with flowers, and on the back wall a painted garden seemed to extend the actual size of the garden. This hotel was excavated in 1806-1809 before the days of photography, but fortunately a drawing made at the time of excavation recorded the painting (Fig. 7), for it has long since disappeared.[13]

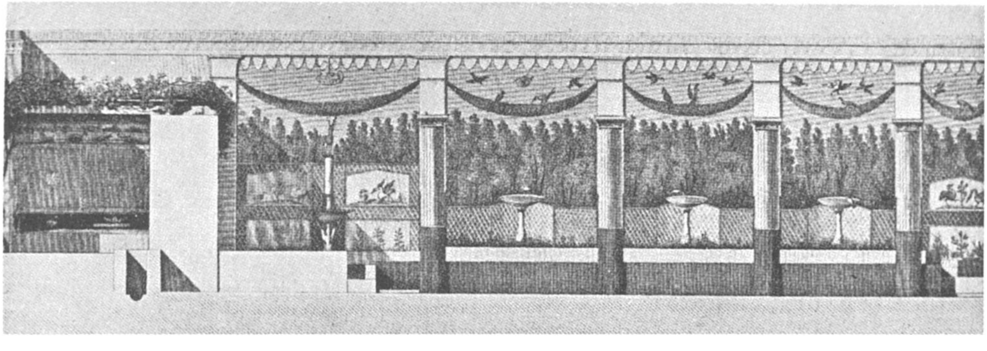

FIG. 7. GARDEN PAINTING

On the east wall of the garden in the Hotel of A. Cossius Libanus.
From Mazois, *Les ruines de Pompei* (1824), 2, Pl.37, fig.1.

In the painted garden three fountains splashed merrily and behind a fence grew dense trees and shrubs. Birds drank from the fountains and flew amid the trees. The garden appeared to be viewed through the columns of a portico, suggesting a continuation of the portico on the opposite side. Between the painted columns were painted garlands, no doubt reminiscent of the actual garlands that were hung between the columns of the portico on festive occasions. Birds flying through the sky at times came to rest on a garland. The Pompeians were very fond of birds, and they were an important part of every garden. An aviary has been found at Pompeii where birds were raised for sale.[14] If a garden was too small for birds the owner could enjoy painted birds.

The charming practice of making a small garden appear much larger by painting a picture of a garden on the back garden wall is a common one at Pompeii. At times even interior rooms were decorated in such a fashion. Pliny the Younger (5.6.22) describes such a room in his Tuscan villa: "The walls are covered with marble for the height of a podium; above is a painting of trees with birds perched among the branches, which has an effect altogether as agreeable as that of the marble." Two rare examples of a cubiculum painted to imitate a garden have recently been found in a modest house (I.ix.5) on the Via dell'Abbondanza.[15]

Guests who chose to eat in the garden of the hotel of Libanus reclined on the masonry triclinium which may still be seen at the north of the garden. The base of the small round table is also still standing. This triclinium too was shaded with a vine-covered trellis. Square pillars in front of the triclinium, together with the holes in the adjacent walls, indicated to Mazois exactly how the trellised covering was fashioned, and enabled him to reconstruct the garden as it was at the time of destruction (Fig. 8). To this delightful spot one of the hotel maids might well have invited guests, using the words of the Syrian copa in the elegy: "Come then, and rest your weary self beneath the shady vine, and bind your heavy head with a chaplet of roses" (31-2).

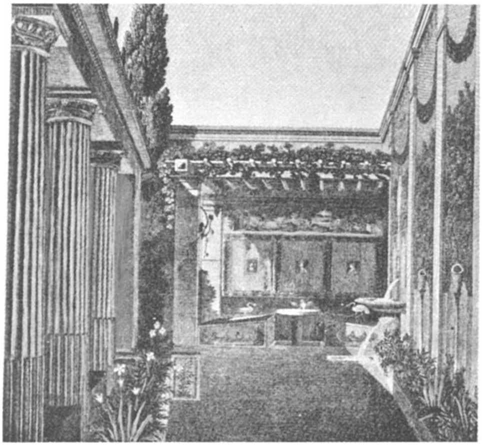

FIG. 8. GARDEN

"Come then, and rest your weary self beneath the shady vine, and bind your heavy head with a chaplet of roses" (*Copa* 31-2).

Reconstruction of the garden in the Hotel of A. Cossius Libanus. From Mazois, *op.cit.*(Fig.7), Pl.38, fig.1.

The hearth located in the north portico (p on plan) was used to prepare the food served in the outdoor triclinium. A whimsical frieze, made up of various items of food that may have been served, was painted in the upper part of the end wall above the red paneling at the back of the triclinium. When Mazois first saw this hotel early in the nineteenth century the painting was fresh and beautiful. But when he wrote ten years later, it was already disappearing, so quickly does pigment vanish when exposed to the inclemency of the elements. Nothing is now left of the garden painting except the faint paneling on the north wall. In addition to the deterioration caused by time, this house was severely damaged during the last war, when Pompeii was bombed.

Water played an important role in the Pompeian garden, and this garden is not without a real fountain. In front of the triclinium a jet of water spurted from the wall into a basin. The fountain was on the back wall in line with the three painted ones. The water may have been conducted to the rectangular basin (k on plan), the inside of which was painted blue.

Originally the north garden had a colonnade similar to the one at the back of the house, but at a later date, probably at the time the house was converted into a hotel, part of the colonnade was enclosed to make two small sleeping rooms (18 and 23 on plan). Second story rooms were added at the same time.

The private apartment of the manager of the hotel was the suite of rooms on the right (31-36 on plan). Here his family had complete privacy, as Mau[16] pointed out, for the apartment could be entered only through a room (29) to the right of the atrium, where a porter was no doubt stationed. From the portico of the garden opened a spacious dining room (35), bedrooms (33 and 34), and a kitchen (36). This apartment, as the construction clearly shows, was not a part of the original Samnite house, but was added later, during the Roman period. These rooms were probably built on land that was originally a large garden. Mazois[17] incorrectly believed that the location and decoration of this portion of the house proved that it was a *Venereum,* a secluded suite dedicated to the pursuit of the delights of Venus. He offers as proof that such apartments existed the famous advertisement of Julia Felix (*CIL* 4.1136). Della Corte[18] has shown, however, that the property of Julia Felix was the headquarters of the aristocratic *Iuvenes Venerii Pompeiani.* Certainly no significance should be attached to the paintings in the apartment of Libanus. The famous lovers, Paris and Helen, and Ares and Aphrodite, as well as Artemis at the Bath, are commonly found at Pompeii.[19] Maiuri,[20] more recently, saw in this apartment a *gynaeceum,* or woman's part of the house. There seems, however, no reason to question Mau's identification of these rooms as the private apartment of the hotel manager.

The resident of a modern city who has seen fine old homes gradually transformed into rooming houses and places of business immediately recognizes a similar deterioration in residence neighborhoods taking place at Pompeii. As the old families fled to the suburbs, their city homes were frequently taken over by wealthy freedmen who converted these houses, all or in part, to commercial use. In the hotel of Libanus the aristocratic character of the old Samnite house was preserved. This was not true of another old Samnite house, at the northern end of the same *insula,* when it was made into a place of lodging. The *insula* in which this building (VI.ii.18-19) is located was excavated from 1780 to 1812, at a time when excavators were primarily treasure hunters, whose chief objective was the discovery of museum pieces. The layout of a humble lodging concerned them not at all. Hence there are no reports on this building. However when Fiorelli[21] studied its ruins many years later he was able to identify large stables with rustic rooms over which were located dormitories or haylofts. Apparently this house had been converted into a *stabulum,* a place where both men and their animals might find shelter. Such places normally sold food. It is difficult to say whether the garden of the original house was still used as a

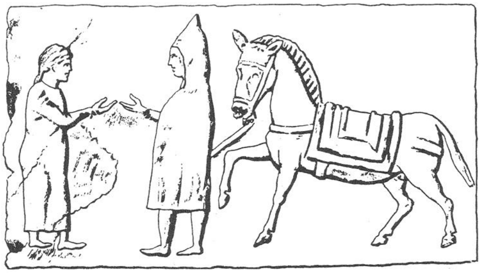

FIG. 9. COPA AND TRAVELER

Relief from a tomb monument from Aesernia. Relief drawing from *Bullettino archeologico napoletano* 6 (1847), Pl.4.

garden, or if the space was occupied by carts and wagons.

The scene of a copa bidding farewell to a hooded traveler and his mule, preserved on a tombstone (Fig. 9) found at Aesernia in neighboring Samnium, was no doubt a common one in the *stabula* of Pompeii. The inn of the Syrian copa was apparently a *stabulum*, for the copa had a warm welcome not only for the weary traveler, but also for his donkey: "Come here. . . . The tired little ass is sweating. Spare him, for the ass is the darling of Vesta" (25-6). The little donkey was a common sight in ancient Pompeii, as he still is today. He is pictured in the wall paintings, and the bones of donkeys and horses that perished in the eruption of Vesuvius have been found in some of the *stabula*.

Still another inn (VI.ix.1) has been identified at the foot of the city wall, at the northern edge of the city. It was located on an aristocratic street, in an *insula* that contained only three other houses. It was identified as the *hospitium* or inn of Gabinius, on the basis of the large graffito which a satisfied customer left on the wall of the *andron: Venies in Gabinianu(m) pro ma(n)su* (*CIL* 4.1314): "You will come into the Gabinianum and you will stay!"[22] At the right of the atrium was an uncommonly large triclinium, with wide windows that looked out on a gracious garden, where guests were no doubt served in summer. One of the bedrooms had a view of the garden.

A survey of the excavated areas near the other city gates likewise shows a natural clustering of inns and restaurants in these places. The traveler entering the city through the Stabian Gate on the south had a wide choice of accommodations. Immediately to his left was a *stabulum* (VIII.viii.1), easily identified because of the well-preserved sloping incline at the curb, which made it easy for both wagons and animals to enter. There was also a watering trough for the animals. The manger was attached to a decorated wall, showing that a former house had been converted, perhaps after the earthquake of 62 which damaged so many buildings. Food may have been sold in the garden at the rear. If not, it was available directly across the street. There were rooms upstairs for guests.[23]

The largest hotel (VII.xi.11/14) found thus far in Pompeii was located on a winding street less than two blocks off the busy Via dell'Abbondanza.[24] Across the street to the north was the lupanar — a rather disreputable neighbor. Across the street to the east were the eminently respectable Stabian Baths. A glance at the plan of the city explains the presence of so many inns and restaurants in this area. Many travelers preferred accommodations near the Forum and the Macellum where they

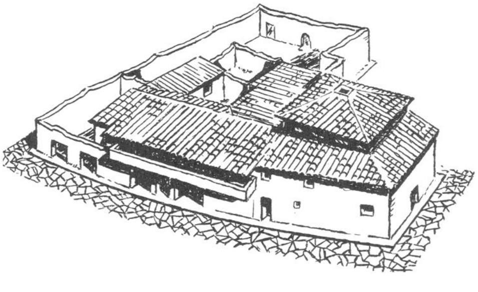

FIG. 10. LARGE HOTEL

Reconstruction of VII.xi.11/14. Drawing by Rudolph Bianconcini based on model in *Civiltà* 3 (1942) 78.

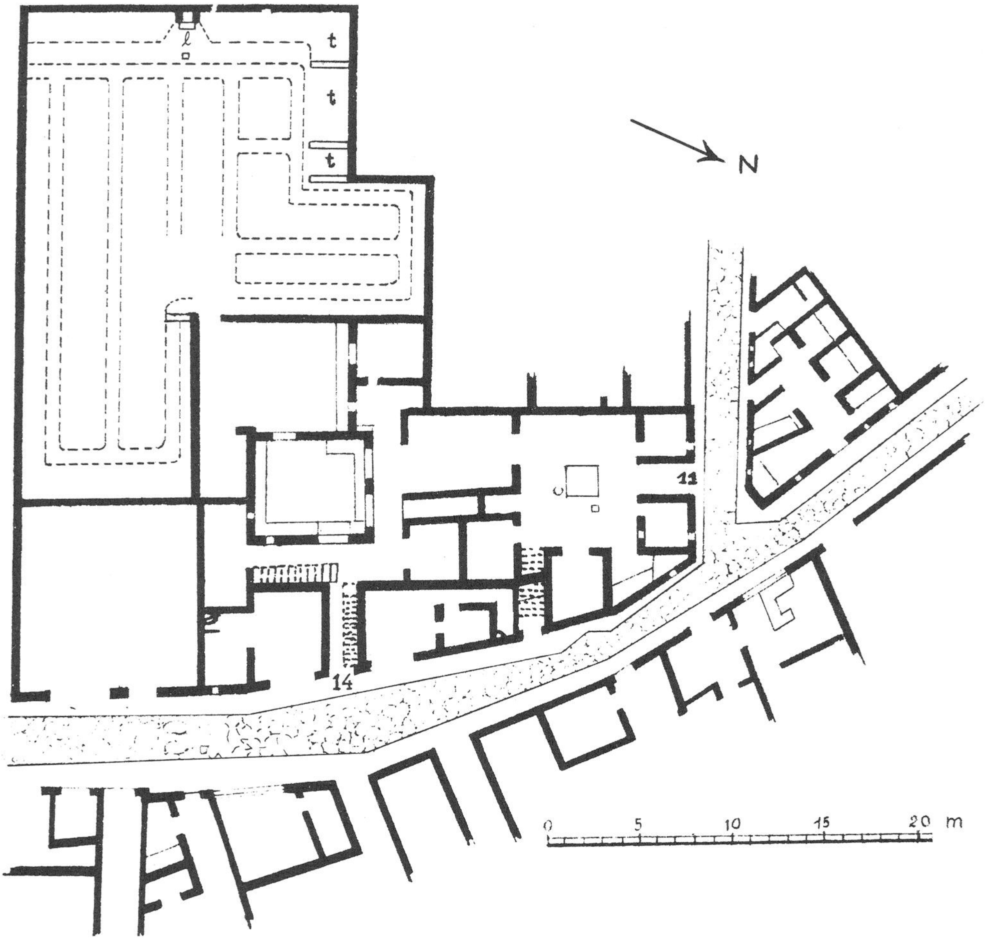

FIG. 11. LARGE HOTEL

Plan of VII.xi.11/14. Based on plan in *Civiltà* 3 (1942) 76.

were taking care of their business. This hotel, which could accommodate more than fifty guests, had a large secluded garden (Figs. 10, 11). On the north wall of the garden were three *trichilae* or arbors of varying sizes (t on plan). The walls were of masonry, decorated with fine painting, while a roof of vines furnished shade. In the center of the west wall was a large lararium (l on plan) built into an arched niche. It seems doubtful, however, if the garden was used exclusively by the guests in 79 at the time the hotel was destroyed, for when the garden was excavated the rectangular plots, separated by little paths which were also used for irrigation, were plainly visible. The plan is obviously that of a produce garden, laid out exactly as recommended by Pliny the Elder (19.60), and as is still done at Pompeii today.[25] The garden may have been planted with fruit trees as it is today, and flowers as well as vegetables for the hotel table may have been grown under the trees. Flowers were regularly included in the ancient Roman vegetable garden. The extraordinary richness of the soil, which is renewed still today when Vesuvius sprinkles volcanic ash over the surrounding countryside, makes it possible to raise at least three crops a year, just as in antiquity, and flowers and vegetables are still grown under fruit trees. Again we are reminded of the Syrian copa, for in her garden there were fruit trees as well as flowers: "There are plums, waxen-colored during the autumn days, and chestnuts, and apples, pleasantly red. . . . And there are blood-red mulberries, and grapes in pliant clusters, and the dark green cucumber hangs on a reed" (18-19, 21-2). Vegetables grow as a matter of course in the garden of the inn, and in company with the fruit trees. Büchner[26] would delete lines 21 and 22 on the grounds that grapes and cucumbers interject an autumn note into a summer scene. He rejects on the same grounds lines 18 and 19 which mention the waxen plums of autumn. But perhaps the poet is using the same license as the artist in picturing his ideal garden. In garden paintings at Pompeii the flowers of spring and summer appear in the same pictures with trees laden with the ripe fruit of autumn.[27]

This large hotel in the middle of the city is of special interest, for Della Corte has shown that it was the headquarters of the Christians at the time of the eruption. Across the street from this hotel was the *hospitium* of Sittius (VII.i.44-5), too modest to boast even a tiny garden for the pleasure of guests. But he did have a dining room with three couches, as his sign proudly states: *Hospitium hic locatur — triclinium cum tribus lectis* (*CIL* 4.807). Pompeians no doubt knew this *hospitium* as the Elephant Inn, for on the front of the inn was the painting of an elephant entwined by a serpent, defended by a pigmy.[28] Sittius was very proud of his dining room where guests could recline as they ate.

It is not surprising to find many eating places in the area of the amphitheater. Here the spectators who thronged to Pompeii from the neighboring cities of Nuceria, Nola, Abella, Stabiae, Surrentum, Neapolis, Puteoli, and Herculaneum during the games could find refreshment and food, at the counter or in a spacious garden. Across from the Palaestra, where visitors might leave the vehicles in which they traveled to Pompeii, was a garden in which an unknown owner served food at humble tables, set up under the trees. His garden restaurant (II.iii.6-7) had originally been part of the xystus of the House of Venus Marina, which was badly damaged by the earthquake of 62, and was in the process of being restored at the time of the eruption in 79. The only permanent fixture in the garden was the masonry triclinium, so located that those who reclined there had a good view of passersby![29] A similar triclinium is conveniently located in a large garden directly across from the amphitheater to the north, where another unknown owner must have enjoyed a rushing business when the games were held.[30]

As I have worked in the gardens of the inns and restaurants of Pompeii, the words of the Syrian copa have come often to my mind. In the ruins of the gardens I have heard the cicadas break into repeated song, and watched the lizard lying hidden in his cool retreat, just as they are described in the Syrian copa's garden (27-8). But I must confess that the Pompeian *lucertola* is a curious fellow, and he soon comes forth from his cool retreat to watch the stranger.

The Syrian copa's vivid description of the garlands that she offers her guests, "wreaths of violets and crocus

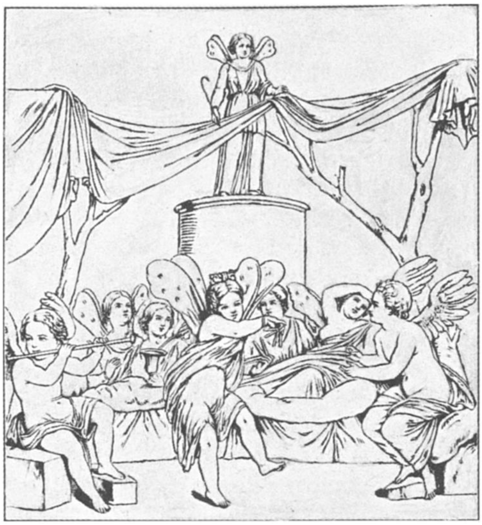

FIG. 12. POMPEIAN WALL PAINTING

"The copa . . . moved her body quivering to the castanets; touched with wine she went through her wanton dance in her well-known inn" (*Copa* 1-3).
From P. Herrmann-F. Bruckmann, *Denkmäler der Malerei des Altertums* (1906), p.86, fig.24.

blossoms, and yellow garlands mixed with crimson roses, and . . . lilies" (13-16) reminds one of the beautiful garlands so abundant in ancient Pompeii, for this city was the center of a large flower trade.[31]

Another couplet speaks of the custodian armed with his willow reaping hook (23). The reference is to the little ithyphallic god Priapus, whose statue in the garden served as a combination garden deity and scarecrow. In Vergil (*Geo.* 4.111) Priapus with his willow reaping-hook protects the garden against thieves and birds.[32] He is pictured in Pompeian paintings of gardens, and his statue has been found guarding the garden of an inn. His statues, however, were normally crude ones, made of wood (Columella *RR* 10.31-4; Horace *Satires* 1.8.1-3) and hence are not preserved. In at least one house (VII.xv.3) his statuette was found among the Penates, the household gods.[33]

The Pompeians frequently pictured Cupids and Psyches in scenes from everyday life. Six badly preserved little pictures found in the triclinium of M. Lucretius (IX.iii.5) represent the gifts of Dionysus to man. One delightful picture could be named the "Pompeian copa," for it calls to mind the Syrian copa who, "head bound with the Greek turban, moved her body quivering to the castanets; touched with wine she went through her wanton dance in her well-known inn, shaking out her elbow to the tune of the harsh pipes" (1-4). The Pompeian painter might well have been illustrating the first two couplets of the elegy (Fig. 12). It would not be surprising to find a Syrian copa at Pompeii. We know the names of a number of girls who worked in Pompeian restaurants and inns and they are preponderantly from the East. There is Hedone, the Greek barmaid famous for

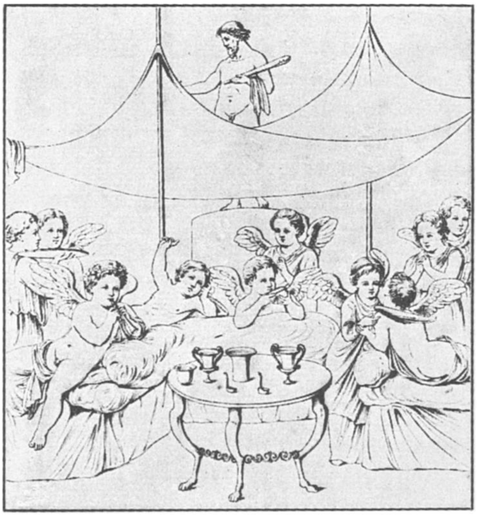

FIG. 13. POMPEIAN WALL PAINTING

"Reap the kisses of a young girl. Let him perish who has a stern brow" (*Copa* 33-4).
From Herrmann-Bruckmann, *op.cit.*(Fig.12), p. 85, fig.23.

her sign which offered a drink for one *as,* a better drink for two, Falernian for four (*CIL* 4.1679)! Then there are the girls who worked in the restaurant of Asellina. We know them from the notices they put up on the outside of the restaurant, recommending candidates in the municipal elections. There is the Smyrna whose name records her native city, the Greek girl Aegle, and the Hebrew maid Maria (*CIL* 4.7862-4, 7866,7873).

A second picture is likewise reminiscent of the Syrian copa's song, for in addition to wine and music she promises the traveler who forgets his severity the kisses of a young girl (Fig. 13). These pictures, although found in a home, could, as the elegy shows, equally well illustrate the entertainment of an inn. They are similar in subject matter to three poorly executed and badly preserved pictures found in a house which has been identified as an inn (V.ii.4). The dancing girl lacks even the transparent tunic of the dancing Psyche, and in the third picture a reveler is so drunk that he has to be propped up by a slave.[34] Della Corte believes that it was at this inn that the fullers held their banquet.[35]

Just outside the Porta Marina, built against the city wall, was a handsome villa dating from the early empire. It had a huge garden and portico and a finely decorated triclinium, one of the largest in Pompeii. On a higher level was a second garden which was also surrounded by a portico.[36] Della Corte believed that this villa was a luxurious inn. On the basis of graffiti found on the portico of the edifice on the opposite side of the Porta Marina he suspected that it too was an inn.[37] One passerby had recommended the cook (*CIL* 4.9146 h); another had recommended one of the girls — Attica by name (*CIL* 4.1751). These may be further examples of luxurious houses converted into inns. It is easy to imagine a traveler stopping at such a place with its commanding view of the bay and enjoying the same delights as those promised by the Syrian copa in her inn.

A Pompeian copa could easily have sung the song of the Syrian barmaid, so accurately did it describe the scenes that she knew. Even the Epicurean note with which the song ends is typically Pompeian: "Bring the unmixed wine and the dice. Let him perish who has a care for the morrow. Death pulling your ear says: 'Live, I come' " (37-8).[38]

Once again, the archaeological evidence at Pompeii makes it possible to reconstruct more clearly another aspect of life in the Roman Empire.

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My research on Pompeian gardens was assisted by grants from the American Philosophical Society and the General Research Board of the University of Maryland.

[1] *Appendix Vergiliana,* ed. R. Ellis (Oxford 1907); *Appendix Vergiliana,* ed. R. Giomini (Florence 1953).

[2] J. W. Mackail, *Latin literature* (New York 1895), p.105.

[3] P. J. Enk, s.v. *Appendix Vergiliana,* in *OCD,* p.73.

[4] For a summary of the various views regarding the authorship of the *Copa,* see K. Büchner, s.v. *P. Vergilius Maro,* in *RE* ser.2, 8 (1955).

[5] *Immundis popinis* (Horace *Sat.*2.4.62); *uncta popina* (Horace *Epist.*1.14.21); *sordentium ganearum* (Aul.Gell.9.2.6); *perfidus caupo* (Horace *Sat.*1.1.29); *cauponibus malignis* (*Sat.*1.5.4). Also see the disparaging descriptions in Cicero *In Pisonem* 6.13; Columella *RR* 1.8.2; Seneca *Ad Lucilium* 51.4.

[6] Four wall paintings found in the tavern of Salvius (VI.xiv.35-6) and six found in a nearby tavern (VI.x.1) are reproduced in T. Kleberg, *Hôtels, restaurants et cabarets dans l'antiquité romaine* (Uppsala 1957), pp.156-62. For the paintings in the tavern of Salvius see F. A. Todd, "Three Pompeian wall inscriptions and Petronius," *CR* 53 (1939) 5-9.

[7] These are listed and described by P. Soprano, "I triclini all'aperto di Pompei," in *Pompeiana* (Naples 1950), pp.288-310.

[8] There is little archaeological evidence elsewhere. Only one inn (rooms for rent attached to the Baths) and a few taverns have been found to date at Herculaneum. At Ostia only one inn and fourteen taverns have been definitely identified, and these are from the second century A.D. and later.

[9] F. Mazois, *Les ruines de Pompéi (*Paris 1824) 2.46; G. Fiorelli, *Descrizione di Pompei* (Naples 1875), p.76.

[10] M. Della Corte, in his valuable book *Case ed abitanti di Pompei* (Naples 1954), locates the homes and places of business of many Pompeians. He discusses the uncommon ethnic cognomen Libanus (pp.29-30). Libanus was of course a Roman citizen, as his three names show.

[11] A. Mau, *Pompeii, its life and art* (New York 1902), pp.283-7.

[12] The word "triclinium" was used for the dining room in the Roman house, as well as for the three couches, which might be made of masonry or of wood.

[13] For a description of this garden at the time of excavation, see Mazois, *op.cit.*(n.9), p.78.

[14] A. W. Van Buren, "An aviary," *Memoirs of the American Academy in Rome* 10 (1932) 10-13.

[15] A. Maiuri, "Nuove pitture di giardino a Pompei," *Bollettino d'arte* 1 (1952) 5-12.

[16] *Op.cit.* (n.11), 285-7.

[17] *Op.cit.*(n.9), p.75ff. T. W. Dyer, *Pompeii* (New York 1871), pp.337-40, followed Mazois' interpretation.

[18] *Op.cit.*(n.10), p.325.

[19] See W. Helbig, *Wandgemälde der vom Vesuv verschütteten Städte Campaniens* (Leipzig 1868), pp.69-71, 81-5 and 287-8 for lists and descriptions of paintings of these subjects; also consult "Index der Bildmotive" in K. Schefold, *Die Wände Pompejis* (Berlin 1957), for pictures on these subjects.

[20] A. Maiuri, "Gineceo ed 'hospitium' nella casa pompeiana," *Atti dell'Accademia Nazionale dei Lincei*, ser.8, *Memorie della classe di scienze morali, storiche e filologiche* 5 (1954) 450-53.

[21] *Op.cit.*(n.9), pp.88-9.

[22] Fiorelli, *op.cit.*(n.9), p.127; Della Corte, *op.cit.* (n.10), p.34; F. M. Avellino, *Bullettino archeologico napoletano* 1 (1842) 68ff.

[23] Fiorelli, *op.cit.*(n.9), p.438; Mau, *Bullettino dell'Instituto di Corrispondenza Archeologica* (1875) 126ff.

[24] Fiorelli, *op.cit.*(n.9), pp.278-80; Della Corte, "L'albergo dei Cristiani a Pompei," *Civiltà* 3 (1942) 73-80.

[25] For a discussion of the layout of the produce garden see W. Jashemski, "The flower industry at Pompeii," *Archaeology* 16 (1963) 112-21.

[26] *Op.cit.*(n.4), col.1157.

[27] See the garden paintings in I.ix.5. Mabel Gabriel, *Livia's garden room at Prima Porta* (New York 1955), p.11, makes the same observation about Livia's famous garden room: "Periwinkles and viburnum bloom in the early spring; iris, roses, poppies, and daisies somewhat later. Oleanders flower in Italy in June and July, chrysanthemums in September, while quinces and pomegranates bear their fruits in late autumn. The seasonal element was entirely disregarded in reproducing this profusion of nature. We have here a fairy garden where, under the touch of the artist, plants, flowers, and birds live together at all seasons in joyful harmony."

[28] Della Corte, *op.cit.*(n.10), p.171.

[29] *Ibid.*, p.322.

[30] *Ibid.*, p.330.

[31] Jashemski, *op.cit.*(n.25).

[32] It is possible that the presence of Priapus in the copa's garden suggests that her inn was also a lupanar. Cf. Hans Herter, "De Priapo," *Religionsgeschichtliche Versuche und Vorarbeiten* 23 (1932) 255-6.

[33] G. K. Boyce, "Corpus of the lararia of Pompeii," *Memoirs of the American Academy in Rome* 14 (1937) 72, no.329.

[34] *Notizie degli scavi* (1884) 47-50; *Bullettino dell'Instituto di Corrispondenza Archeologica* (1885) 243, nos.11,12,13.

[35] Della Corte, *op.cit.*(n.10), pp.104-5; Della Corte, "Fullones," in *Solemne praeconium J. A. Galante tributum* (Naples 1921), pp.85ff.

[36] Maiuri, *Bicentenario degli scavi di Pompei* (Naples 1948), pp.31ff.

[37] Della Corte, *op.cit.*(n.10), pp.366-8.

[38] The mosaics in Pompeian triclinia decorated with a skeleton or skull, and the famous Boscoreale drinking cups ornamented with skeletons, suggest the same thought.

The Caupona of Euxinus at Pompeii
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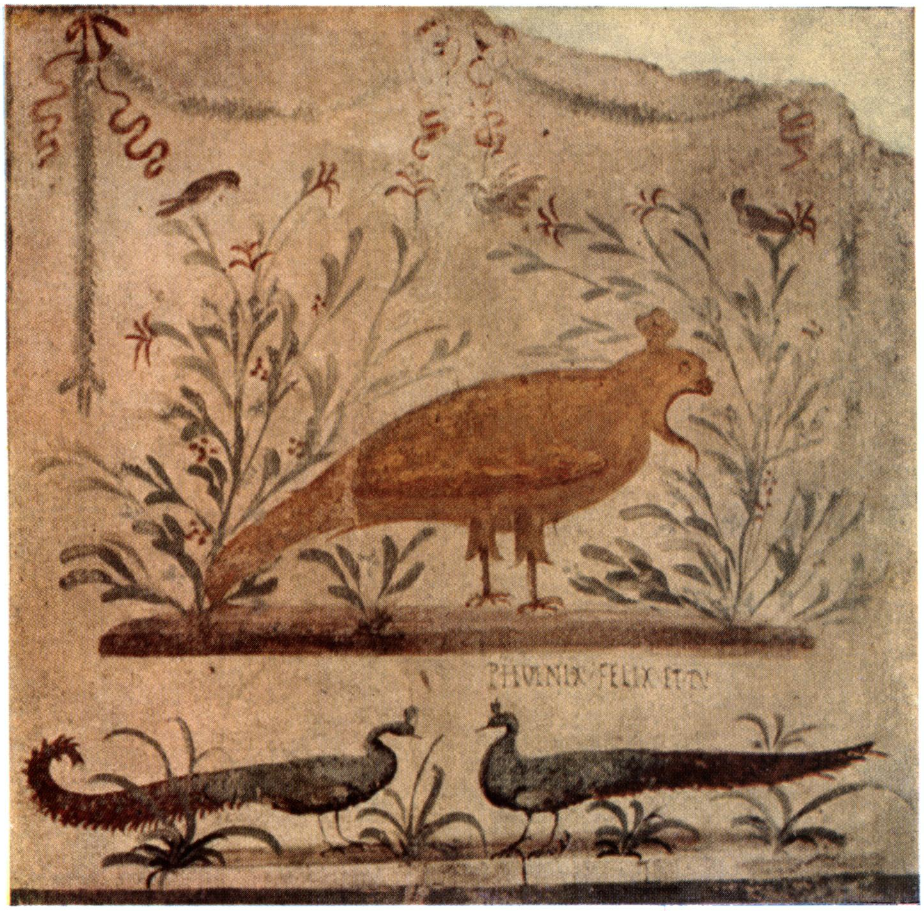

1. Shop sign of caupona of Euxinus.

The Caupona of Euxinus at Pompeii

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By WILHELMINA F. JASHEMSKI
Professor of Ancient History, University of Maryland

Photographs by Stanley A. Jashemski

THE RUINS OF POMPEII continue to yield important information about this busy commercial city. Excavations through the years have revealed many wine and food shops, with a concentration of inns near the city gates, the baths and the Forum. More recently, many establishments that furnished food, drink and lodging *(cauponae)* have been uncovered in the vicinity of the Amphitheater. Here the Pompeians, as well as visitors who thronged to the spectacles from the neighboring towns of Nuceria, Nola, Abella, Stabiae, Surrentum, Neapolis, Puteoli and Herculaneum, could find refreshment. These cauponae reveal a new aspect of Pompeii.

One of the most interesting of them was recently excavated on the Vicolo di Castrice, a short walk from the Amphitheater. A remarkable painting of a phoenix and two peacocks was uncovered on a wall near the entrance (Figure 1). Just below the phoenix are the painted words: PHOENIX FELIX ET TV. The wall painting was obviously a shop sign, but its meaning was not immediately clear. As more of the volcanic debris was removed, an electoral notice was found below the painting. It reads:

Q POSTVM(ium) M CERRINIVM
AED OVF EVXINVS ROG(at)
NEC SINE JVSTO SCR HINNVLVS

"Make Q. Postumius and M. Cerrinius aediles, I beg of you. Euxinus makes this request, not without Justus. Hinnulus wrote it."

The inscription identifies the owner of the establishment as Euxinus, who "not without Justus" is recommending Q. Postumius and M. Cerrinius for election as aediles, the magistrates who had charge of the streets, markets, baths and public games in the Amphitheater. Justus may have been part owner of the business, while the sign writer was Hinnulus. To the right of the entrance is a recommendation of Felix for duovir, one of the two chief magistrates at Pompeii: FELICEM II VIR OVF.

When the interior of the building was excavated some years later, it became clear that Euxinus operated a caupona (Figure 2). The L-shaped counter at the entrance made it possible to serve passers-by on the street as well as those who stepped inside. A stove at the end of the counter had a roof-tile for a fire bed—a device used to insure an especially hot fire. (Ashes from the last fire were still visible at the time of excavation.) Two huge jars embedded in the counter (Figure 3) kept food or drink hot for the customers. Holes in the west wall of the restaurant apparently held supports for wooden shelves or racks, which have not survived. Such racks, for holding wine amphoras, can be seen in a shop at nearby Herculaneum, where wood has been much better preserved (Figure 4).

Among the many amphoras found during the excavation were three with painted inscriptions giving the name, address and occupation of the owner. The one shown in Figure 5 reads:

POMPEIS
AD AMPHITHEATR
EVXINO COPONI

"At Pompeii, near the Amphitheater, to the copo *Euxinus."*

Another amphora has an inscription (no longer visible) identical with this one except for the spelling "Eusino," which suggests the common pronunciation of the proprietor's name. This spelling is also found in a third inscription.

THE CAUPONA OF EUXINUS was a sizable establishment (Figure 6). Behind the room with the counter were three other rooms, a storeroom and a latrine. To the east of the counter room two doors led into a large open area, apparently a garden. In this area, which could also be entered directly from the street, there was a second latrine and steps leading to a second story.

Even after the excavation was completed, in the summer of 1960, the use of the open area was still not certain. In spite of crowded conditions in Pompeii after the earthquake of A.D. 62, which damaged much of the city, there were still many large open areas. It is often difficult to determine if these were gardens. A peristyle garden is easy to recognize; in a produce garden the rectangular plots, separated by narrow paths used also as irrigation channels, are usually plainly visible at the time of excavation. Such plots were found in the garden attached to a large hotel in the center of town near the Forum. However, no garden plots were visible in the open area attached to the caupona of Euxinus, and only a sub-surface examination could reveal whether it had been planted. This I undertook in the summer of 1964, with the permission and encouragement of Professor Alfonso de Franciscis, Superintendent of Antiquities in Campania.

The technique involved in this kind of work is

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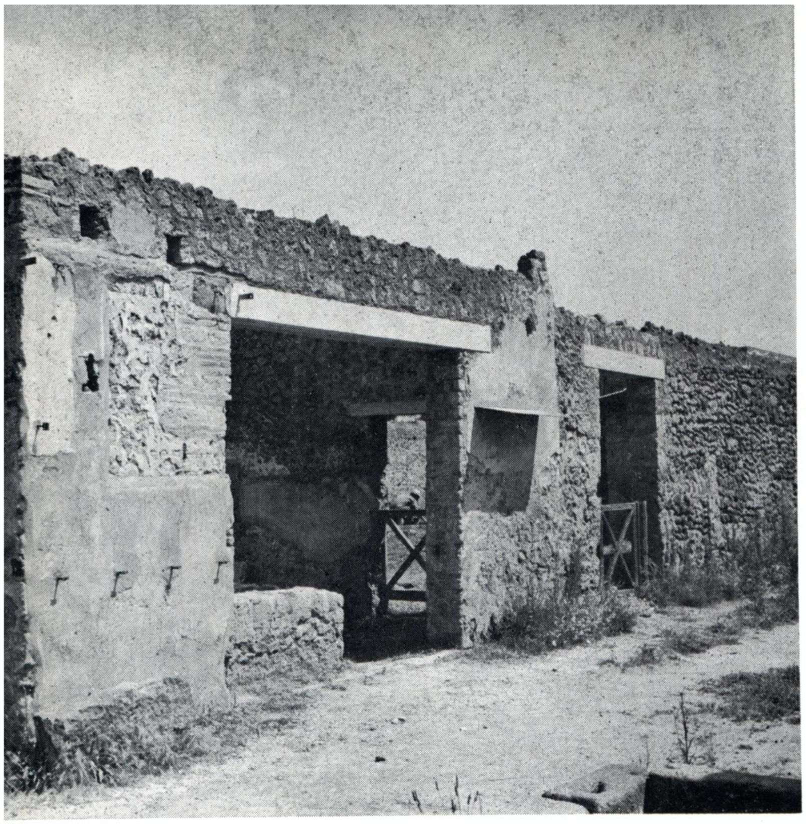
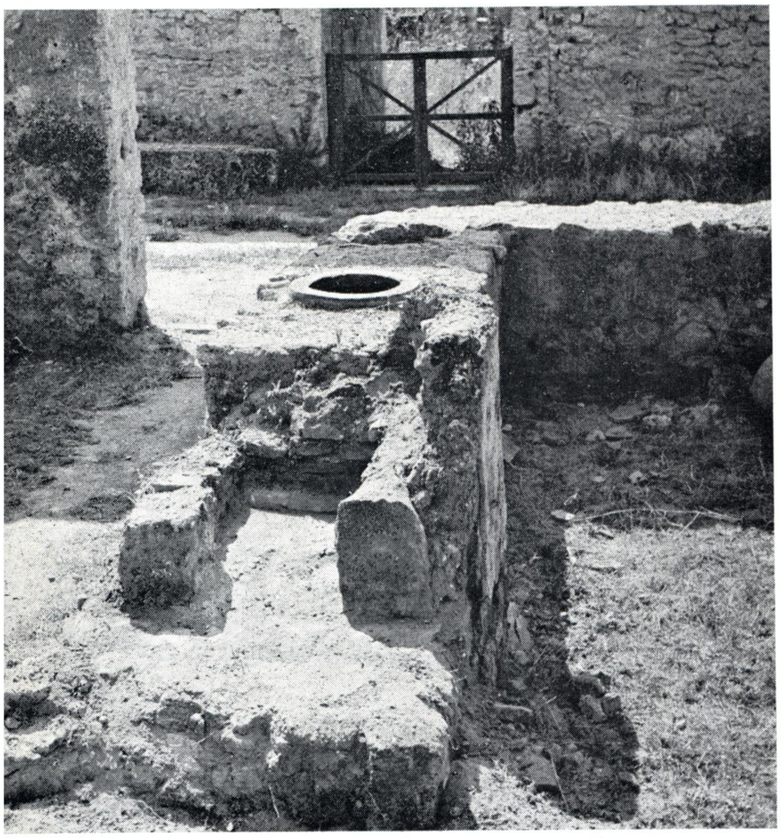
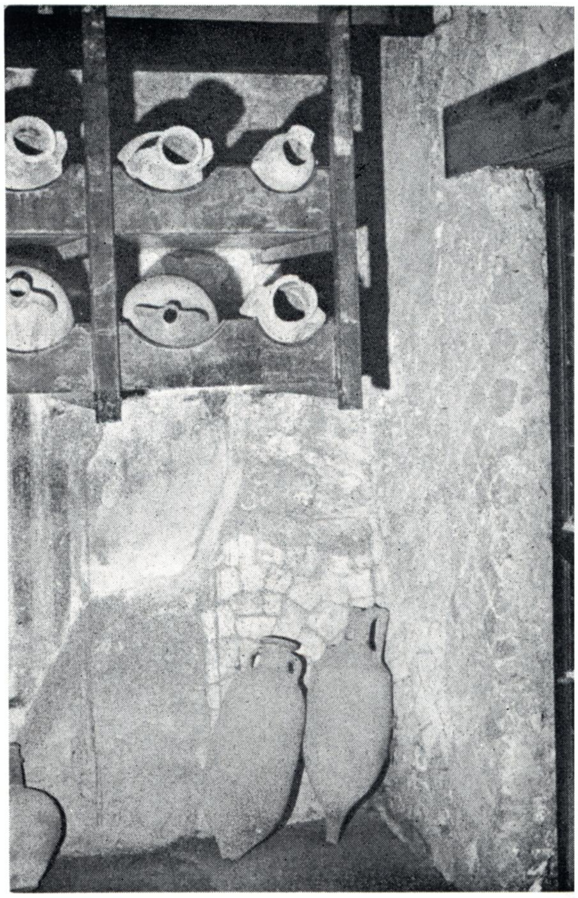


2. *(Left)* Caupona of Euxinus from the street.

3. *(Left, below)* Counter in the caupona of Euxinus, showing place for stove and mouths of storage jars. View looking toward door and street beyond.

4. *(Right, below)* Original wooden wine-racks in a well preserved food and wine shop at Herculaneum.



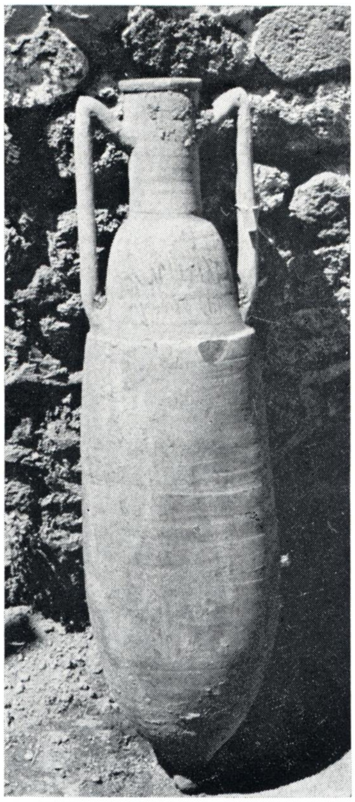


Caupona continued

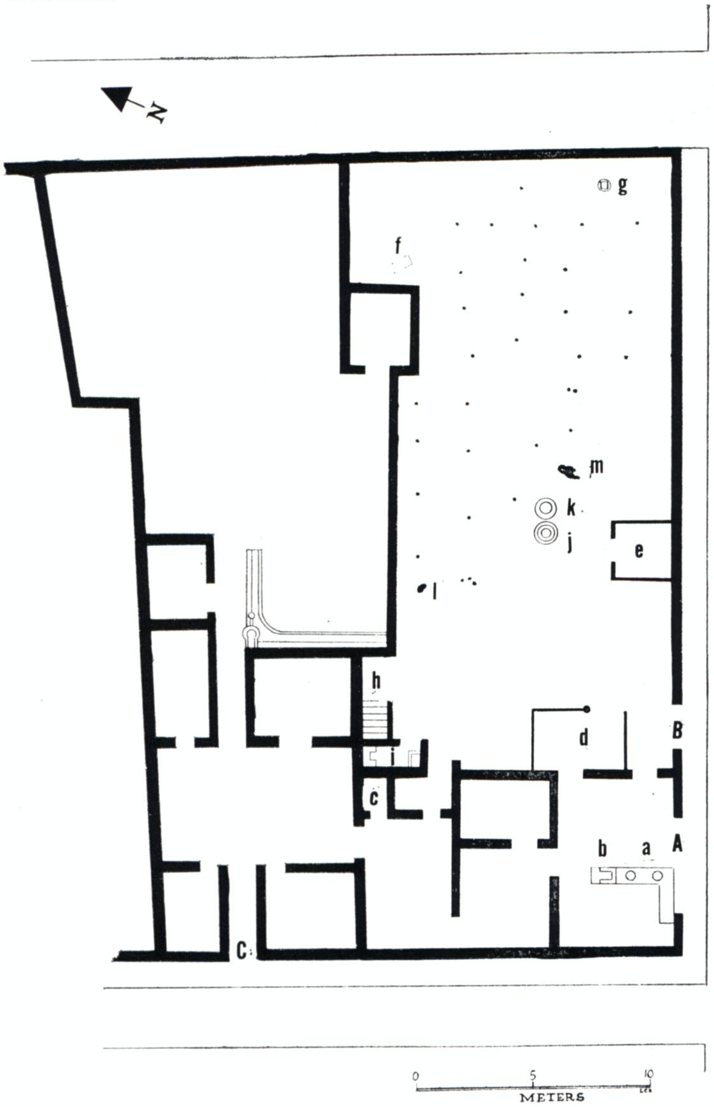
closely related to that which has been used in making the casts of victims who perished in the eruption. The first such casts were made by Giuseppe Fiorelli, who put the work at Pompeii on a scientific basis when he became director of the excavations in 1860. In excavating the upper fill of the city he found what appeared to be hollow molds containing bones. It occurred to him that these might be the remains of human beings killed in the disaster of 79. The fact was that some people did not flee the city when Vesuvius began to erupt but sought refuge in the second story of their homes. They were forced to flee when the lapilli began to reach that level. The shower of lapilli, however, was followed by a cloud of ash-dust mixed with steam which suffocated them and covered their bodies. These decomposed in time, and as the damp ash dried it solidified into a hard mold. Fiorelli carefully cleaned out these molds and filled them with plaster. When the plaster had hardened, the molds could be cracked and pulled away, revealing plaster casts of the bodies. In all, forty-one plaster casts of ancient Pompeians have been made to date, and there is even a cast of the chained watchdog that perished in the house of M. Vesonius Primus. In a few cases it has also been possible to make casts of wooden doors. One such cast of a shop-door on the Via dell'Abbondanza (Figure 7) is of interest because it shows the type of folding wooden door which Euxinus used to lock up his shop.

Casts of ancient roots can be made in much the same way. When the roots of trees and plants decayed they left cavities, and the volcanic debris which cov-

5. Amphora addressed to Euxinus. Inscription is in red letters.



6. Caupona and home of Euxinus (I.xi.10-12). A. Entrance to caupona. a) counter. b) stove. c) latrine. B. Entrance to garden. d, e) garden rooms. f, g) altars. h) steps to second story. i) latrine. j) dolium. k) broken dolium. l, m) tree roots. The location and relative size of the grape-vine roots are also indicated. C. Entrance to home of Euxinus.



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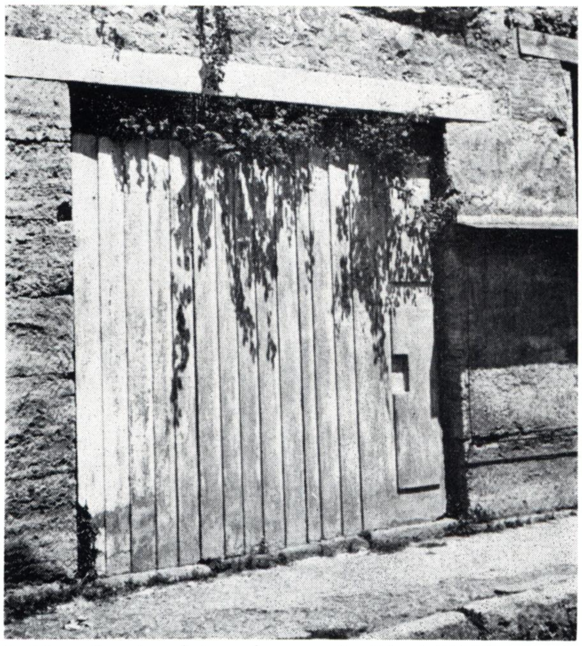


7. Cast of a closed shop door on the Via dell'Abbondanza.

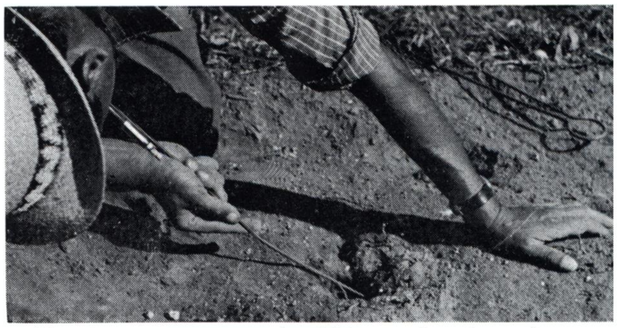
Caupona continued

ered the garden gradually trickled into these until they were filled. Small feeder roots, of course, would not be preserved, for they were smaller in diameter than the lapilli.

Volcanic ash is so fertile that the excavated areas are soon covered with vegetation. The first growth is quite charming—the beautiful wild flowers of Campania—but gradually tangles of brambles and young saplings put down tenacious roots which destroy all evidence of ancient root cavities.

By 1958 most of the open area in Euxinus' establishment had been excavated. When we began our examination it was covered by a thick growth, but we were hopeful that the roots were not large enough to destroy the evidence of ancient roots. Before clearing the entire area we decided to make a trial exploration in one place, scraping down to the original ground level. We were rewarded almost immediately by finding three circular areas (each about three inches in diameter) filled with lapilli. When the holes were completely emptied (Figure 8) they appeared to be cavities left where three deep roots had decayed. The next deposit of lapilli that we cleaned out was baffling; the irregular shape revealed was certainly not that of a root cavity. Soon a workman handed me a tooth, then bits of bone and then two more teeth. It suddenly dawned on us that we had found the spot where a dog had buried his bone! (The teeth were later identified by the Smithsonian Institution as those of a pig.) The next cavity (almost six inches in diameter), with branching laterals, was shaped very much like a grapevine root. We emptied a much larger cavity, fourteen inches in diameter, in which we found bits of carbonized root mixed in with the lapilli. The shape of the cavity was that of a tree root. Many more cavities were found that appeared to be left by grapevine roots. But most exciting was the discovery of the cavity of a huge tree root, twenty-three inches in its largest dimension at ground level. By the end of the third day we had evidence of thirty-four roots.

The ~~next step was to fill the~~ cavities with cement and make casts of the roots so that we might study their shapes and identify them (Figure 9). When all the cavities had been filled, the cement was allowed to harden for three days; then the soil was removed. It was now clear that Euxinus had possessed a vineyard, for there were thirty-two grapevine roots and the roots of two trees (Figure 10). We know from literary evidence that Campania, and specifically the Pompeii area, was planted with vineyards in antiquity (Pliny, *Natural History* xiv. 34-35, 69-70; xxiii. 45) as it is today. We also have abundant archaeological evidence for the production of wine in the many *villae rusticae* excavated in the vicinity of Pompeii. Best known is the villa in which the Boscoreale treas-



8. Cleaning out a root cavity. The man is using a long-handled instrument with a tiny spoon on the end.

ure was found; this had a large room with three winepresses and a courtyard with eighty-four large storage jars *(dolia)*, seventy-two of which were for wine. The discovery of the root cavities in Euxinus' garden is significant, however, for it shows that there were vineyards even within the city.

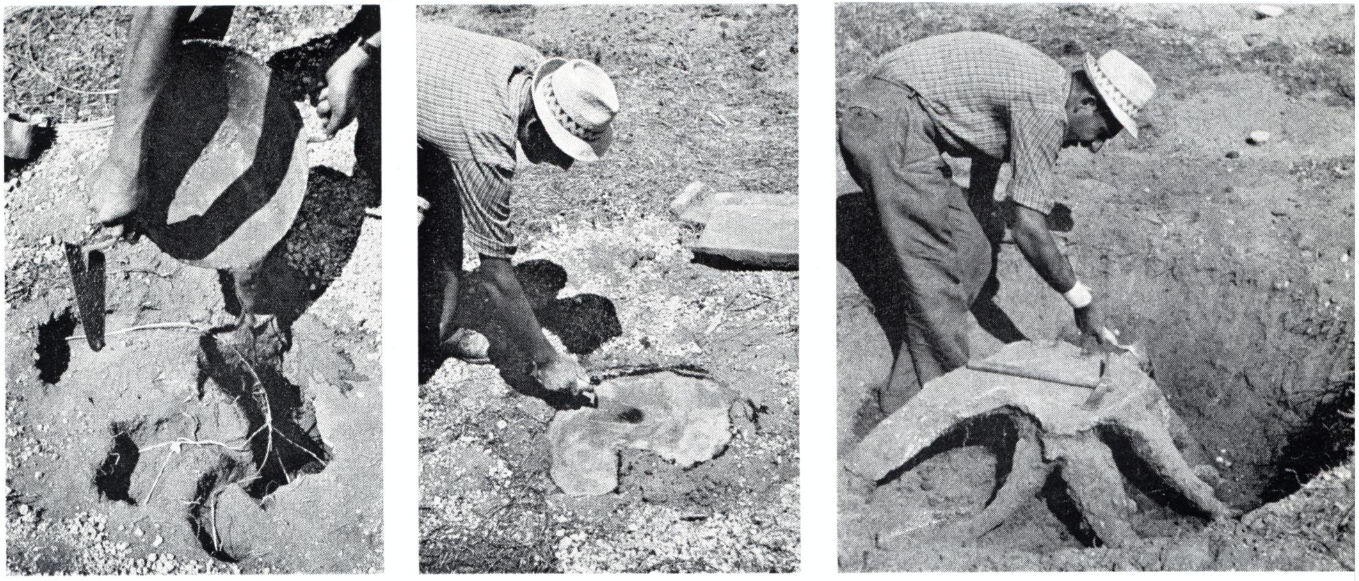
The vines were planted in rather irregular rows. There is no evidence as to how they were supported. Ancient writers describe several methods that were commonly used. Pliny the Elder (who lost his life attempting to rescue friends during the eruption of A.D. 79) discusses contemporary viticulture at length in his *Natural History*. He is enthusiastic about wine made from grapes grown in an *arbustum*, that is, supported on trees (xvii. 199), and he says that the arbustum was popular in Campania (xiv.10). It still is today. Among other methods of support he describes "vines propped up with stakes about as tall as a man of middle height" (xiv.13). Varro, in his manual on agriculture, describes the arbustum as well as supports of stakes, reeds and cords of rush (i.8.2). Columella, a contemporary of Pliny, gives directions in his treatise on agriculture for supporting vines with chestnut props, willows and reeds (iv.30 ff.) and says that such vineyards produced the most grapes.

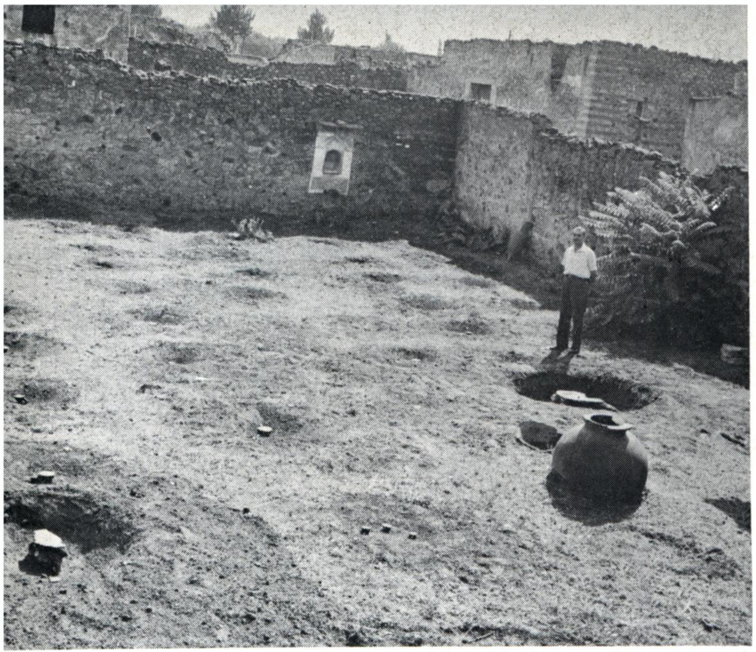
Archaeological and epigraphical evidence indicates that the Pompeians were acquainted with these various methods of propping vines. A wall painting in the House of the Vettii shows Cupids gathering grapes from vines supported by trees. Graffiti found in villas in the vicinity of Pompeii indicate that stakes were commonly used for supports. One graffito mentions 1023 stakes in a big pile (*in acervo magno pali sunt MXXIII* [*CIL* IV. 6887]); another mentions 840 sharp stakes, 460 which were not sharp, a total of 1300 (*palos acutos DCCCXL qui non acuti CDLX summa MCCC* [*CIL* IV. 6886]). In one villa a large number of well preserved stakes was discovered. It is obvious from their location that Euxinus' vines were not supported by trees, for in an arbustum vines were planted in rows 20-30 feet apart. Since no stake holes were found, we must conclude that the vines were propped up with poles or stakes that were not buried deeply enough to make a cavity.

Euxinus' grapes no doubt supplied part of the wine served in his restaurant, but no remains of a press were found. The grapes may have been transported to a nearby press or perhaps the juice was extracted by treading the grapes in a small portable wooden tub. This process is depicted in the vintage scene on a beautiful cameo glass vase found at Pompeii (Figure 11). A boy is shown treading grapes in a round vat while a companion adds more fruit. The workman who made the root casts for us assured me that grapes crushed by bare feet produced much better wine than that from a press, which bruises the seeds and gives the wine a bitter taste.

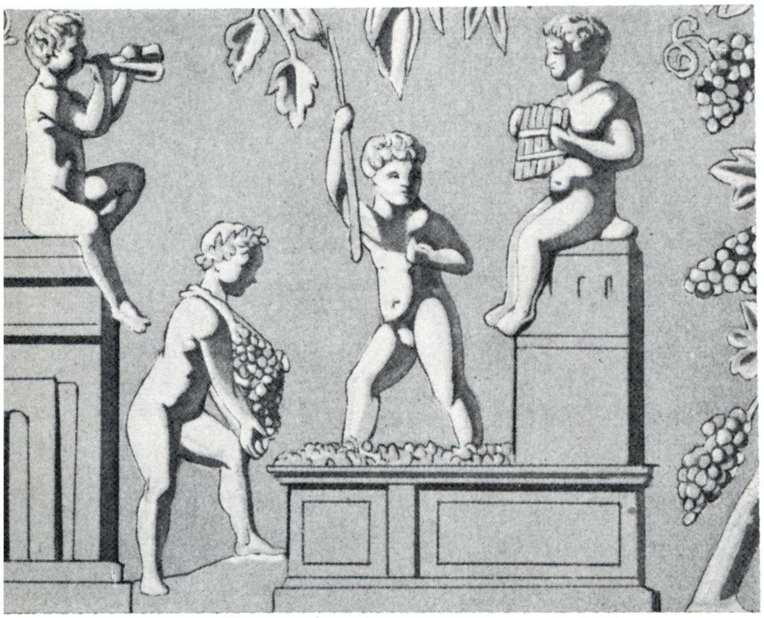
After the juice was extracted it was stored in large pottery jars until it fermented. The dolia found in Euxinus' garden (one complete, the other badly

9. Steps in the process of making the cast of a large tree root: a) pouring cement into the cavity; b) the cavity filled with cement; c) the cast as it appeared after the surrounding soil had been removed.



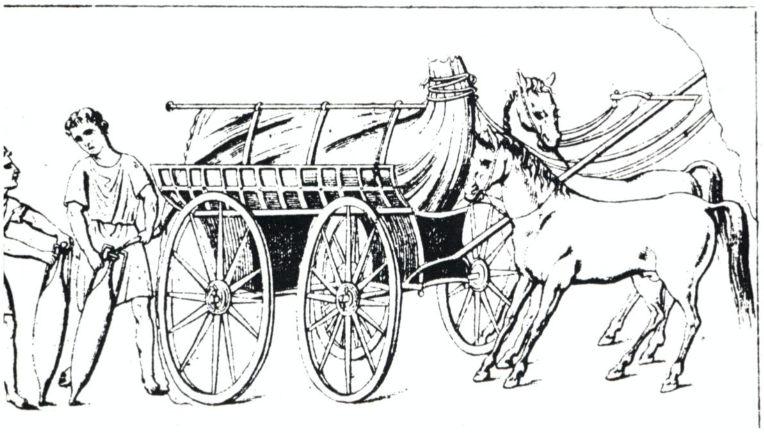


10. Garden of Euxinus with finished casts after surrrounding soil had been partially removed.



11. Boy treading grapes, vintage scene depicted on cameo vase found in the Street of Tombs at Pompeii. The vase is now in the National Museum, Naples.

12. Delivering wine in a large animal skin, painting found in Pompeii tavern. From *Real Museo Borbonico* V (1829) 48.



Caupona continued

broken) were apparently used for this purpose. When ready for use the wine was stored in amphoras. According to Pliny, the finest wines in Campania underwent fermentation in dolia exposed to the open air, while weak vintages were kept in jars sunk in the ground (*N. H.* xiv.134, 136). It would thus appear that Euxinus' wine was not weak, for the dolia were not buried in the ground (see Figure 10).

It is interesting to speculate on the amount of wine produced in this small vineyard. Columella (iii.3.11) says that any vineyard that does not produce at least three *cullei* of wine per *jugerum* should be uprooted. A culleus is a measure equivalent to the contents of twenty amphoras. Ancient amphoras varied greatly in size, but when used as a measure one amphora was equivalent to six gallons and seven pints; twenty would be 137½ gallons. Three cullei would be 412½ gallons. A jugerum contains 28,800 square feet. The vineyard of Euxinus is approximately 30 x 60 feet or 1800 square feet, 1/16 of a jugerum. According to Columella's minimum yield, Euxinus' vineyard should have produced at least 25¾ gallons. Because of the great fertility of the soil and the intensive cultivation possible in a small vineyard, he probably produced two or three times that amount, perhaps as much as 75 gallons. The size of the dolia may also give a clue. They are much smaller than those in the Boscoreale villa, which held 315 gallons each. The unbroken dolium in Euxinus' garden holds approximately 100 gallons, while the broken one appears to have been about the same size. The capacity of the two dolia may indicate that Euxinus made wine from grapes obtained elsewhere, perhaps from other property belonging to him.

Since this vineyard could have provided only a small part of the wine needed for the restaurant, Euxinus no doubt bought from other producers. Two paintings on the walls of a tavern near the Forum show how wine was delivered in huge animal skins carried on wagons (Figure 12). These must have been a familiar sight in Pompeii as they stopped at wine shops and restaurants to make their deliveries.

ONCE WE HAD LOCATED the planted area (see Figure 6), we could speculate with more accuracy regarding the use of the remaining space. Against the south wall of the garden are the colorful remains of a little room with painted walls (Figure 13). The exterior was constructed in *opus craticium* (wooden latticework embedded in plaster); the depressions left by the decayed wood have now been filled with cement. The painting at the base of the wall is remi-

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niscent of the lattice fence found in garden paintings, behind which plants can be seen growing. Above such a fence there is usually a painting of a garden instead of the bold checkerboard pattern found here. On the exterior of the east wall are painted stylized plants (not visible in Figure 13).

Along the west wall of the garden, just outside the restaurant, is a small enclosure with a low wall (Figure 14). No painting is preserved on the outside, but the inside is painted to represent a fence with plants growing behind it. A garden painting in the storeroom of the Naples Museum (Figure 15) suggests that the outside of the low wall might once have been painted to look like the low reed fence in this painting. The enclosure was, then, perhaps an arbor.

Quite possibly the garden was used as an extension of the dining area. There is no evidence of a masonry triclinium, as in some gardens, but no doubt crowds from the Amphitheater were willing to be served less elegantly at tables set up in the garden rooms and under the spreading branches of the two trees. A painting in another restaurant indicates that table service was not unknown at Pompeii. Martial, in his *Epigrams* (v.70.3), speaks disparagingly of this type of restaurant and taunts the boor who does not recline when eating.

A caupona usually had a few rooms to let for overnight guests, and this seems to be the case here. The arrangement of rooms behind the counter room is not that of a private house. The adjacent building, as can be seen in Figure 6, is part of the same establishment; a door leads from the back room into the atrium of the second house. The room off the garden in the north house has a large window that opens into the garden to the south—another indication that the two properties had a common owner. Probably Euxinus and his family lived in the north building while the south building was for customers. The rooms upstairs in the south building were presumably for the use of overnight guests.

Graffiti on the west wall of the garden reflect the banter between serving girls and patrons. Beside the door leading into the counter room, beneath a figure of the god Priapus, were the words of a well known song:

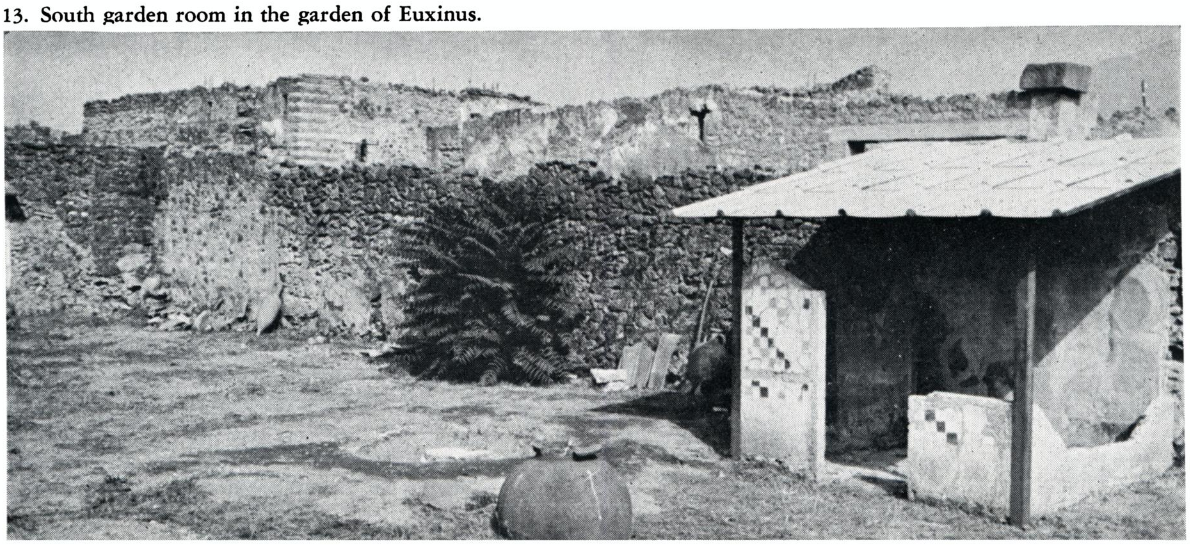
> "The blonde taught me to hate brunettes. I will hate them if I am able, if not, unwilling I shall love them."

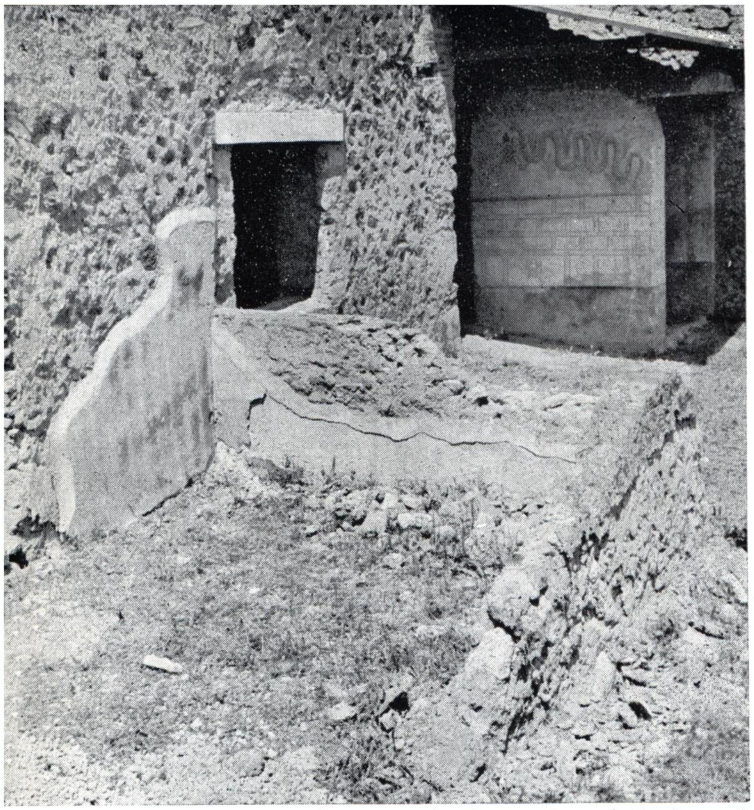
The little ithyphallic Priapus is frequently pictured in Pompeian paintings of gardens, for his statue served as a combination garden deity and scarecrow. Normally, his statues were crudely made of wood (Columella x.31-4; Horace, *Satires* i.8.1-3) and hence are not preserved; however, a remarkable stone statue of Priapus was found protecting the garden in a nearby inn. The representation of Priapus in Euxinus' garden suggests that his caupona may have been a *lupanar* (brothel) as well. A little below the words of the song was another graffito which seems to refer to a singing contest in which the judge between the two rivals was one of the girls of the caupona:

"Hic duo rivales ca(n)ont (per canunt) (?) Una puella tenet fasces/. . . . ." "Here two rivals sang (?). A girl held the fasces. . . . ."

At the right of the door leading into the room with the counter, below a figure of Bacchus, was found a verse of a hackneyed song found at other places in Pompeii. The late Professor Matteo Della Corte suggested that the beginning, which is lost, had perhaps been traced on the wooden trim around the door:

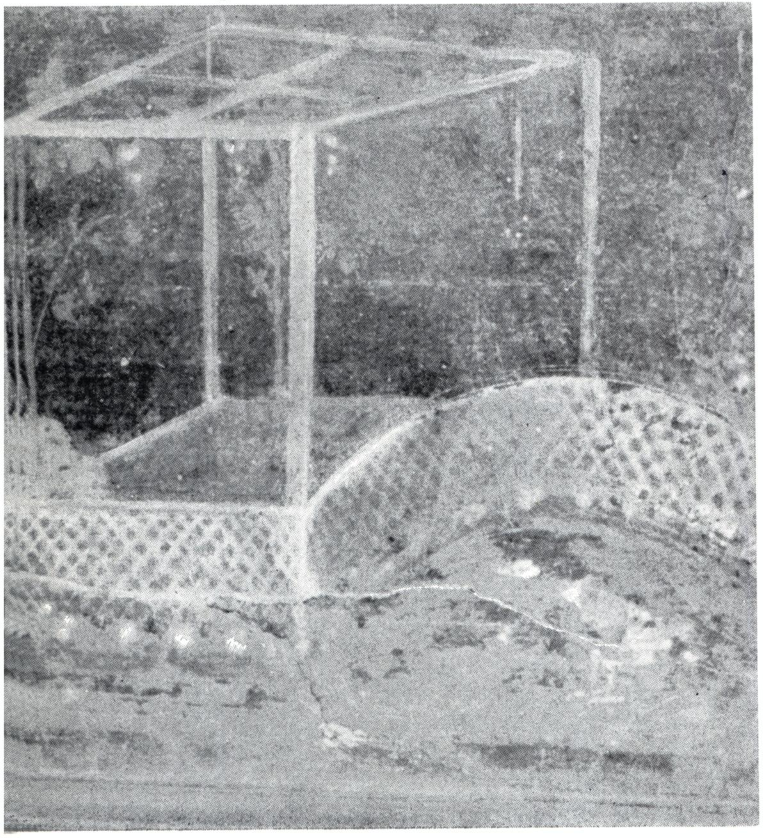
13. South garden room in the garden of Euxinus.





14. West garden room in the garden of Euxinus. A lararium painting with snake approaching altar can be seen on exterior wall of garden latrine, to rear of garden room. Another lararium painting is in the counter room.

15. Grape arbor. Detail of a garden painting found at Pompeii. National Museum, Naples.



Caupona continued

"(Venimus h) oc cupidi multo magis ire cupimus." "Eagerly we come here; we are more eager to leave." These graffiti, uncovered in 1955, are no longer in existence.

The representations of Priapus and Bacchus (which were neither photographed nor described and have now disappeared) are not the only references to gods and cults in this restaurant. At the east end of the garden are two well preserved altars. The southern one stands before a niche in the east wall which has a painted stucco pediment. In this niche once stood statuettes of the Lares and Penates. A rustic altar in the northeast corner has a shelf at the back for holding the utensils used in sacrifice. Ashes left from the last offering were found on the altar at the time of excavation.

The caupona of Euxinus enables us to picture for the first time the rather rustic restaurant with rooms to let, that served food and drink at the counter and in the dining room as well as in the garden to the crowds that came to Pompeii for the spectacles in the Amphitheater. The serving girls whose presence is suggested by the graffiti on the garden wall remind us of the Syrian *copa,* or hostess, in the delightful little poem in the *Appendix Vergiliana,* who invites the traveler to stop and enjoy the various pleasures of her inn:

"Come then, and rest your weary self beneath the shady vine . . ."

The *copo,* Euxinus (whose name appropriately means "friendly to strangers"), wrote his invitation to passers-by on his sign: "The phoenix is happy, and you will be too, if you come into my restaurant." Did Euxinus mean more than this? It is tempting to speculate whether the phoenix and the peacocks on his impressive sign had religious significance—pagan or perhaps Christian—as symbols of immortality.

This humble restaurant has already yielded much information. Rich in remains that make it come alive, the property of Euxinus adds a new dimension to our knowledge of land use and of social life at Pompeii.

The author wishes to acknowledge the grants from the General Research Board of the University of Maryland that have assisted her research at Pompeii.

For the invitation of Euxinus to passers-by and the election notice on his caupona see Notizie degli scavi 1958 *pages 83-84, nos. 25-27; the graffiti on the garden wall are published in the same issue, nos. 28-30. The stakes found in the villa are reported in* Notizie degli scavi 1923 *page 271 ff. The inscriptions on the amphoras have not been previously published.*

A Pompeian Vinarius
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A POMPEIAN *VINARIUS*

The beautiful peristyle houses of the wealthy citizens at Pompeii are well known; elaborate mosaic floors and paintings attract both scholar and tourist. Gardens lavishly landscaped with fountains, pools, statues, and formal plantings charm all who see them. But scattered throughout the city are many humble houses with rustic walls simply painted, and gardens—frequently at the rear—devoid of any evidence of decoration. These houses, neglected by tourist and scholar alike, are of considerable importance, for they have much to tell about the lives of a large part of the population. Pompeii, because of its sudden destruction by Vesuvius, is a unique archaeological site. Only at Pompeii have the houses and shops of thousands of inhabitants been preserved. For this reason Pompeii is an unexhausted source of information about many aspects of social and economic life in the Roman world.

One of the most interesting of these modest houses (IX.ix.6-7/10) (Fig. 1) is located on the Via Nola just a short walk from the Nola Gate, but it goes unnoticed by visitors to this part of the city who are attracted by the impressive houses in the neighborhood. The palatial forty-room House of the Centenary, lavish both in its layout and decoration, occupies most of the insula to the west. To the east is the large home of Obellius Firmus, and to the north is the small but elegant home of Lucretius Fronto, which has some of the finest third-style painting to be seen in the entire city.

The plan as well as the decoration of the house at IX.ix.6-7 is modest (see Fig. 2).[1] The house consisted basically of an atrium without impluvium with two adjoining rooms, a large triclinium which opened off the portico facing the garden at the rear of the house, several service rooms, and a shop which faced on the street. Stairs indicate that there were second-story rooms. The walls of the entrance hall, the atrium, and the rooms to the north of the atrium, as well as the corridor that led to the garden, were roughly plastered, without decoration. The room to the south of the atrium had crudely decorated walls, as did the triclinium. This simple house and shop, together with the large garden at the rear, occupied more than one fifth of an insula. The garden is more generous in size than many of the beautifully landscaped gardens in the city, but the humble character of the property indicates that the garden too was used for practical purposes.

The large number of amphorae found in the house and garden suggested to the first excavators that this was the home of a

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The author acknowledges the grants from the General Research Board of the University of Maryland that have assisted her research at Pompeii. All photographs are by Stanley Jashemski.

[1] A. Sogliano, *Notizie degli scavi di antichità* (1889) 122-6; A. Mau, *Mittheilungen des Kaiserlich Deutschen Archäologischen Instituts, Römische Abtheilung* 4 (1889) 14ff. The literature on this house is difficult to locate because the site was excavated before the numbering of houses at Pompeii had become stabilized. Sogliano gives the address as Region IX, Insula vii^{a}, Entrance 6; Mau as IX.vii.6. *CIL* refers to the house sometimes as IX. viii.6, at other times as IX.vii.6. For this reason the pertinent references are brought together in Fig. 8.

vinarius or wine-merchant.[2] Day, in his valuable study of agriculture in the life of Pompeii,[3] has shown the importance of wine-production in the fertile area surrounding Pompeii. Much of this wine must have been sold at Pompeii, but no detailed study has been made of the actual marketing of this product in the city. The home and shop of an important Pompeian wine-merchant should furnish valuable details regarding this aspect of the economic life of the city. One hundred fourteen amphorae[4] were found in his property, and of these an uncommonly large number, at least sixty, bore inscriptions. (Only one site in the entire city has yielded more amphorae.) The largest number, forty-two, were found in the garden. Twenty-nine empty amphorae were stored upside down in a room (o) off the garden. Smaller numbers of amphorae were found in several rooms of the house, and in the shop (see Fig. 8).

Inscriptions were usually drawn or painted on the amphora in red, black, or white. Some amphorae were labeled by pressing a stamp on the handle before it was fired. Inscriptions might include such information as the name of the producer, the contents and weight of the amphora, the name of the estate or villa on which the contents were produced, and the name of the person to whom the amphora was being sent. Sometimes the consular year in which the wine was made was recorded. One amphora of imported wine, found at Pompeii, even records the name of the ship on which it arrived.[5] Labels with the pertinent information may have been tied around the necks of the amphorae, but it is our good fortune that this information, or a part of it, was often painted or written on the amphorae, perhaps in case the attached labels were lost.[6]

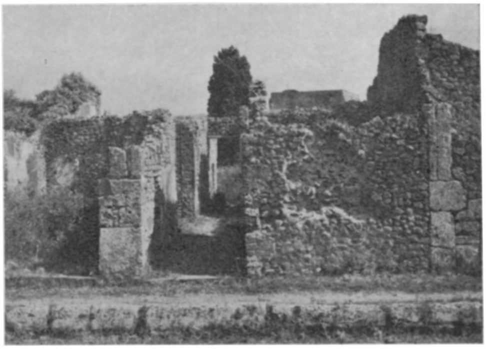

FIG. 1. HOUSE AND SHOP OF A WINE-MERCHANT

It is quite possible that the inscription C. CAESIO RESTITVTO[7] on an amphora, found in the room to the south of the atrium, gives us the name of the *vinarius*. Della Corte[8] is inclined to believe that this is a safe assumption. The name of the addressee was usually given in the dative, that of the producer or merchant in the genitive or ablative. The Caesii were one of the prominent families in Pompeii, already known during the early years of the Roman colony.[9] Restitutus, however, was a common slave name.[10] The *tria nomina* of course indicate that this man was a Roman citizen. It would seem, then, that C. Caesius Restitutus was a freedman. Freedmen frequently, upon emancipation took the praenomen and nomen of their master, and retained their own servile name as a cognomen. The Caesii were one of the families connected with wine-production in the Pompeii area.[11] Quite possibly C. Caesius Restitutus was a freedman of the Caesii, and one of their retailers in the city.

The wine was sold in the shop at the front of the house. The shop had a good

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[2] Sogliano, *op. cit.* 125; Mau, *op. cit.* 14.

[3] *Yale classical studies* 3 (1932) 167-208.

[4] The term *amphora* as used by the excavators includes the smaller terra-cotta container technically known as an *urceus*.

[5] *CIL* 4.5894; *Notizie degli scavi* (1905) 257.

[6] The ancient authors use various words when referring to labels: *pittacium* (Petr. 34), *titulus* (Juv. 5.34), *nota* (Hor. *Carm.* 2.3.8). See M. H. Callender, *Roman amphorae* (London 1965) 5-6, for a discussion of the practice of attaching labels to the necks of amphorae.

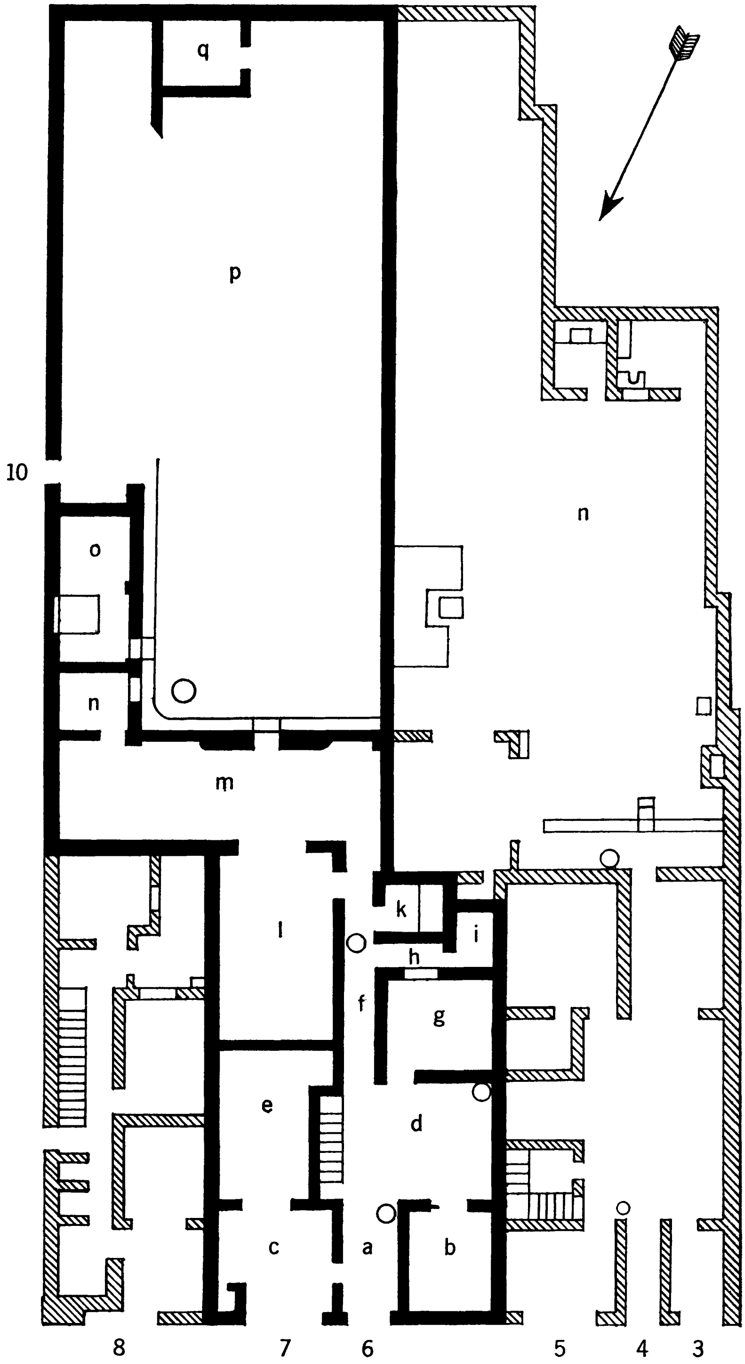
[7] *CIL* 4.5794.

[8] *Case ed abitanti di Pompei*^{3} (Naples 1965) 137-8.

[9] A member of this family, L. Caesius, was duovir soon after the establishment of the Sullan colony, for his name is listed in the inscription (*CIL* 10.819) which records the magistrates who let the contract for the Forum Baths built soon after 80 B.C.

[10] A. M. Duff, *Freedmen in the early Roman empire* (Cambridge 1958) 110.

[11] Day, *op. cit.* 204,206; Della Corte, *op. cit.* 64. A *vinum Caesianum* (*CIL* 4.5516) was known at Pompeii.



6. House of wine-merchant
    a. fauces
    d. atrium
    l. triclinium
    m. portico
    p. garden
    q. sacellum
7. Shop of wine-merchant
4. House of *medicus*
    n. garden of *medicus*

FIG. 2. HOUSE AND SHOP OF A WINE-MERCHANT (IX.ix.6-7)
Drawing by Leona Crandall.

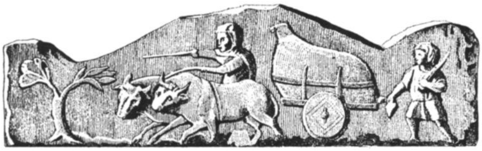


FIG. 3. WINESKIN BEING TRANSPORTED FROM THE COUNTRY

Sculpture, Lateran Museum. From Otto Jahn, *Über Darstellungen des Handwerks und Handelsverkehrs auf antiken Wandgemälden* (Leipzig 1868), Taf.V.3.

location, little more than six blocks from the Nola Gate, through which wine could be brought into the city from the outlying villas where it was produced. In spite of the importance of wine in the diet of the ancient Romans,[12] the literary sources tell us practically nothing about the *vinarius* and his business activities.[13] Nor do the various inscriptions referring to *vinarii* give any significant information.[14] As for many other aspects of social and economic life, we are almost entirely dependent on the archaeological evidence. An interesting sculpture now in the Lateran Museum (Fig. 3) shows wine being transported from the country in a large animal skin mounted on a cart. Two paintings found at Pompeii on the walls of a tavern near the Forum illustrate how the wine was drawn off in amphorae when it arrived in town (Fig. 4). The neck of the animal was tied up and one of the legs served as a spigot. Apparently the boys in the picture were filling a large order, for they have unharnessed the horses. Empty amphorae stored in room (o) may have been filled in this fashion. Different labels on the same amphora indicate that amphorae were at times reused. Some wine was probably delivered directly to houses, especially if villa owners had property or relatives at Pompeii.[15]

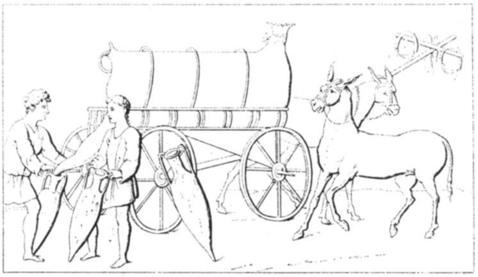


FIG. 4. DELIVERING WINE

Wall painting found in tavern VI.x.1. From Jahn, *op. cit.*, Taf.V.1.

Specialty wines were probably delivered in amphorae, and of course imported wines arrived in amphorae. A picture of Cupids portrayed as wine-dealers, in the triclinium of the House of the Vettii, gives us a good picture of a wine-dealers's shop (Fig. 5). Business activities and shops at Pompeii are frequently depicted in charming little wall paintings which show Cupids engaged in the activities of men.[16] In this picture an elegant city-dweller is sampling wine offered by a rustic dealer. At the left the amphorae of wine are stored. At the right, two slaves are pouring another sample. A tufa relief (Fig. 6) on the exterior of a shop near the Forum at Pompeii shows the way the wine was delivered after the purchase had been made.[17] Five amphorae were found in the shop on Nola Street at the time of excavation. Rows of lines traced with carbon on the back wall of (c), to the right of the entrance to (e), showed where the *vinarius* had reckoned a bill.[18] The absence of a street counter would indicate that wine was not served in the shop to passers-by; customers may have been served in the house of the *vinarius*. Three terra-cotta lamps found in the atrium, one in the shape of a ship with sixteen lights (Fig. 7), led Mau[19] to suggest that large

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[12] Wine was the second most important food item. See Helen J. Loane, *Industry and commerce of the city of Rome 50 B.C.-200 A.D.* (Johns Hopkins University studies in historical and political science ser.56 no.2) 16, who estimates an annual consumption of about 105 quarts a person.

[13] Plautus *Asinaria* 436; Suetonius *Claudius* 40.

[14] Loane, *op. cit.* 123, points out that although inscriptions of *vinarii* are numerous they are not revealing.

[15] T. Frank, *An economic survey of ancient Rome* (Baltimore 1938-40) 5.258.

[16] M. Rostovtzeff, *Social and economic history of the Roman empire* (Oxford 1957) 2.578 n.20.

[17] For a discussion of this relief, which shows *phalangarii* carrying an amphora on a long pole, see F. Marx, "*Phalangarii*," *Rheinisches Museum* 78 (1929) 329-36.

[18] Sogliano, *op. cit.* 126; Mau, *op. cit.* 18.

[19] Mau, *op. cit.* 15.

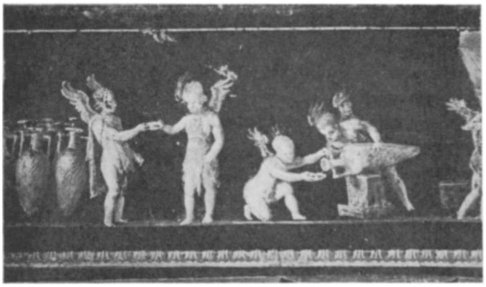

FIG. 5. CUPIDS AS WINE-DEALERS
Wall painting from the House of the Vettii (VI.xv.1).

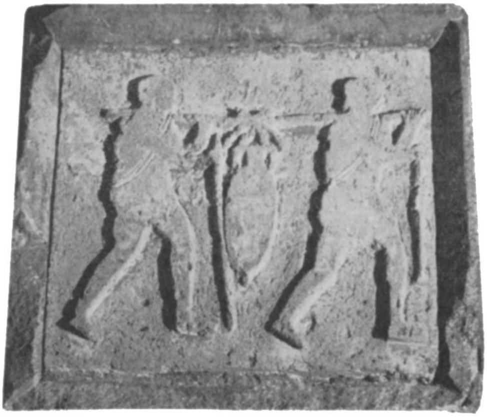

FIG. 6. PORTERS DELIVERING AMPHORA
Tufa relief on shop VII.iv.16.

numbers of people seem to have gathered there. But other finds neither proved nor disproved the theory. The room to the south of the atrium, however, gives the impression of being used for customers, for the walls had a crude decoration, and the floor was *opus signinum* (tiny pieces of tile and brick mixed with fine mortar and pounded down).

Amphorae vary in size and shape.[20] Forty-five different shapes of terra-cotta containers have been found at Pompeii, and catalogued.[21] These are mostly two-handled amphorae, but six kinds of small pitchers or *urcei* have also been found. Unfortunately the reports make no mention of the shapes of amphorae found if they have no inscription. In fact, uninscribed amphorae are not even counted in some of the reports. Nine shapes of terra-cotta containers with inscriptions were found in the property of our *vinarius*. Shape XI was by far the most common (see Figs. 8, 9).

The inscriptions indicate that this *vinarius* offered a wide selection of wine to his customers. In addition to the local vintages, various specialty wines were available, including an amphora of the famed Falernian.[22] There was also an amphora of Surrentine wine, produced by a certain Fabius in the year A.D. 70: SVRR FAB/ IMP VESPASIANO II COS.[23] (Both Falernian and Surrentine wines ranked high on Martial's list of desirable wines at Rome, 13.108-25.) *Lumpa* (or *lympha*),[24] a clear white wine grown on Vesuvius, is mentioned on two amphorae: one has the name of the wine-producer, Q. Postumius, and also that of C. Hostius Agathemerus,[25] perhaps a person who leased one of the estates of Q. Postumius[26]; the other amphora of *lympha* has the name of C. Holconius,[27] a producer whose name is otherwise unknown. The famous Lacrima Christi is made today from grapes grown on the slopes of Vesuvius.

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[20] When used as a measure, however, an amphora was equivalent to six gallons and seven pints. A standard measure of this size was kept at the Capitolium.

[21] Forty-five different shapes are illustrated in *CIL* 4 Suppl. Plates 1-3: *vasorum formae* (two different amphorae are numbered 15). Occasionally an amphora is found which does not exactly correspond to one of these shapes; it is labeled "almost" a shape.

[22] *CIL* 4.5554

[23] *CIL* 4.5521. See P. Remark, *De amphorarum inscriptionibus Latinis quaestiones selectae* (Tübingen 1912) 17.

[24] See Mau, note to line 2 of *CIL* 4.5605: "lum(pa) i.e. lympha vet(us) . . . ; vini albi limpidi nomen esse credo." See also Remark, *op. cit.* 23; Day, *op. cit.* 169.

[25] *CIL* 4.5608. Of the 27 inscriptions referring to this wine listed by Mau (*CIL* 5.5605-28) five (probably six, if complete) had the names of Q. Postumius and Agathemerus; four were Shape VII amphorae. One of these was found in the shop to the east (IX.ix.8), which Mau believed belonged to our *vinarius*. Thirteen amphorae of *lympha* had the name of M. Valerius Abinnericus and three the name of M. Valerius Heliadis. All were Shape VII. More recently seven more amphorae of *lympha* were found; all were Shape VII and three had the name of M. Valerius Abinnericus (*Notizie degli scavi* [1958] 428a-430). See also *CIL* 4.9375-8. Only twice has *lympha* been found in other than a Shape VII amphora.

[26] Day, *op. cit.* 183.

[27] *CIL* 4.5628

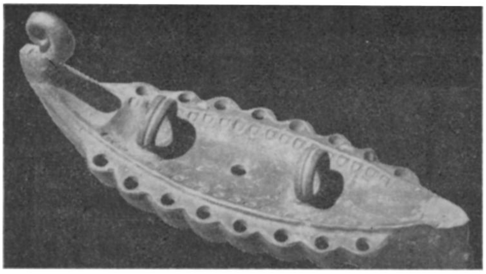

FIG. 7. TERRA-COTTA LAMP FOUND IN HOUSE OF THE WINE-MERCHANT

Now in the Museo Nazionale, Naples.

The inscription VIR found on two amphorae was classified as of uncertain meaning by Mau in the *Corpus inscriptionum Latinarum*,[28] but Della Corte,[29] publishing amphorae with this inscription that have been excavated more recently, believes it is an abbreviation for *vi(num) r(ubrum)*. (*Vinum*) *Rurianum*,[30] mentioned on one amphora, is not otherwise known. Other producers mentioned include T. Claudius Antiochus, an imperial freedman,[31] whose name has also been found in Greek on two amphorae in VIII.v-vi.15 and on the neck of a broken amphora in VI.xv.2. L. Helvius Zosimus,[32] mentioned on two other amphorae found in IX.ix.6-7, is otherwise unknown. There was also wine produced by a P. C. Vitalis,[33] and a T. Had(ius) Col(umbus?),[34] otherwise unknown. One label Lucr(etius?)[35] may refer to the decurion M. Lucretius, a priest of Mars who was believed to have been an important wine grower because of the wall paintings referring to wine found in his house (IX. iii.5). Unfortunately the *tria nomina* of the producer are frequently represented by three initials that cannot be identified. Sometimes only the initial of the nomen or the cognomen is given. Nine of the inscriptions are in Greek, evidence of the large number of Greeks in the Pompeian area. The fact that so many different producers are recorded on the amphorae at Pompeii would indicate that individual villas marketed their own products.

In several instances the inscriptions indicate contents other than wine. Four amphorae, all Shape XI, are labeled *mol(a)* and probably contained a coarse meal or flour.[36] This should not surprise us, for amphorae were the containers in which many products were stored and marketed. Amphorae containing such varied products as nuts, cherries, chickpeas in lard, lentils, honey, bean-meal (*lomentum*) for cosmetic use, and sweet white olives, have been found at Pompeii. One amphora of *mola* was from the estate of the imperial freedman and wine-producer Ti. Claudius Antiochus.[37] This amphora was found in the former triclinium, which was used as a storeroom. Two others labeled *mola* were from the estate of the wine-producer Helvius Zosimus.[38] These were found among the empty amphorae stored upside down in the large room off the garden.

Among these empty amphorae were four (also Shape XI) marked with the ligature STR[39] and letters that probably stand for the *tria nomina* of the producer. Mau did not attempt an explanation of the meaning of this ligature, but more recently Della Corte,[40] editing other amphorae with the same ligature, has read it as (*oliva*) *stricta* (or *destricta*), that is, hand-picked olives, which were considered much superior to those shaken from the tree (Varro *R.R.* 1.55; Cato *R.R.* 65; Columella 12.50.1).

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[28] *CIL* 4.6212,6213.

[29] *Notizie degli scavi* (1958) 164-5.

[30] *CIL* 4.5580.

[31] *CIL* 4.5806. See Day, *op. cit.* 178-9, for a discussion of the large number of imperial freedmen engaged in viticulture in the Pompeii area. In the list of individual growers compiled by Day, "eighteen, or about 22 per cent . . . could be reasonably considered freedmen of the emperor." The imperial family apparently owned the pottery factory where amphorae and dolia were made.

[32] *CIL* 4.5847.

[33] *CIL* 4.5787.

[34] *CIL* 4.5845.

[35] *CIL* 4.5859; see Frank, *op. cit.* 253, for wall paintings of viticulture found in the home of M. Lucretius.

[36] The word *mola* appears in the literary sources in connection with the familiar *mola salsa*, the coarse meal mixed with salt that was sprinkled on victims at sacrifice. One amphora found at Pompeii was labeled *far* (*CIL* 4.2567), perhaps another type of coarse meal, or grits.

[37] *CIL* 4.5751.

[38] *CIL* 4.5753,5756.

[39] *CIL* 4.6181,6185,6186.

[40] *Notizie degli scavi* (1958) 163: "*str* vale (*oliva*) *stricta* (o *destricta*) a mio parere."

Two amphorae (also Shape XI) labeled with this ligature were found in the house of another wine-dealer (I.ix.5) in 1952 in the new excavations.[41]

It should not surprise us to discover products other than wine being marketed from villas in the Pompeii area. Day has shown that although wine was the most important product, oil production was also significant. Production was diversified, and grain was one of the crops raised.[42] This would be consistent with the advice of Columella (1.2), who suggested that the villa owner diversify his crops.

Seven inscriptions were found on pitchers (*urcei*) that were less than eighteen inches high (see Shape VI, Fig. 8). In each the label shows that the *urceus* contained one of the fish sauces so popular at Pompeii. Three contained the best quality of *garum*, known as *garum flos*; two contained *liquamen optimum*, one *muria*, and one was labeled *hallex optima*.[43] It is difficult to say whether the fish sauce was for sale. The amount found was no more than might be used by a family. It is possible, however, that the shop of a Pompeian *vinarius* had various staples for sale. A study of the contents found in other shops is in progress, and may throw interesting light on this question. This study, which includes a tabulation of all containers found at Pompeii, may also show the extent to which the shape of a container indicated the contents.

The presence of a large terra-cotta dolium, such as is commonly used in making wine, suggested that at least part of the garden might have been planted in vines, and that some wine, perhaps of a special quality, might have been made at this site. In recently excavated areas it is possible to make subsoil examinations and, if the overgrowth has not put down large and destructive roots, to find evidence of the ancient roots. For when the ancient roots decayed the volcanic lapilli trickled down into the cavity until it was filled. Since this garden had been excavated over seventy-five years ago (1887-9) it seemed unlikely that any evidence of ancient planting could be recovered. Fortunately, however, the heavy growth that covers so many of the excavated houses had not taken over this garden. With the exception of a beautiful cypress at the back of the garden, the only growth was a thick carpet of tall ferns. With the permission of Professor Alfonso De Franciscis, Superintendent of the antiquities of Campania, I began to search for evidence of ancient plantings. The undertaking seemed fruitless; seventy-five years of growth appeared to have destroyed any evidence of ancient roots. We continued, however, to remove soil, and finally, at a depth of about two thirds of a meter, we discovered two circular areas, about 20 cm. and 14 cm. in diameter, both filled with lapilli. These we carefully cleaned out, using a long-handled instrument with a tiny spoon at the end. When the areas had been completely emptied, they appeared to be the cavities left where two deep roots had decayed (Fig. 10). At a distance of about two and a half meters we eventually found two more holes filled with lapilli, which we emptied. Then a third cavity was found.

We next filled the cavities with cement, and made casts of the root holes, so that we might study their shapes, and more definitely identify them. When the cavities had been filled, the cement was allowed to harden; the soil was then pulled away from the finished casts (Fig. 11). It was clear that our wine-merchant had planted at least part of his garden in vines. We had also proved that if conditions are favorable it is still possible to study land use and establish planting patterns in sites excavated at least three quarters of a cen-

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[41] *Ibid.* nos. 442,443.

[42] *Op. cit.* 170-76.

[43] *Garum CIL* 4.5664,5667,5684; *liquamen optimum* 5707,5709; *muria* 5721; *hallex optima* 5718. For a description of the various fish sauces see Remark, *op. cit.* 25-7; Thomas H. Corcoran, *The Roman fishing industry of the late Roman republic and early empire* (Northwestern diss. 1957); Corcoran, "Roman fish sauces," *CJ* 58 (1963) 204-10. For recipes see Barbara Flower and Elizabeth Rosenbaum, *Apicius, the Roman cookery book* (London 1958) 22-4.

Location	No. found	No. inscribed	Shape	Color	*CIL* 4	*Notizie*	*RM* 1889	Inscription
Atrium (d)	1	1	frag.	Red	6120	1887 p.414	p.15	
(b)	9	1	XI	R	5845	1887 p.561	p.16	T HAD COL
Tablinum (g)	3	3	XII	White	5521	1887 p.561	p.17 n.1	SVRR FAB
			XI	R	5794	p.561	n.2	C CAESIO RESTITVTO
			XII		6164	p.561	n.3	
Shop (c)	5	1	X	Black	6367	1888 p.524 n.3	p.18	
(k)	7	1	XII	R	5554	1887 p.414	p.19	FAL
Portico (m)	5	4	VI	B	5684	1887 p.562	p.21 n.1	G F SCOMBR
			VI	B	5709	p.562	n.2	LIQVAMEN OPTIMVM
			X	B	6152	p.563		
			frag.			p.562	p.21	not intelligible
Triclinium (l)	9	5	XXIX	R	6519	1888 p.527 n.32	p.22 n.3	
			XI	R,B	5751	n.33	n.2	TI CL ANTI MOL
			VIII	R	5806	n.34	n.1	TI CL ANTI
			VIII	R	5974	n.35	n.4	
			VI	B	5707	n.36	n.5	LIQVAMEN OPTIMVM
(n)	4	2	VI	B	5721	1888 p.523 n.1	p.23 n.2	MVR
			VI	B	5664	n.2	n.1	G FLOS
Storage room for empty amphorae (o)	29	16	XI	R,B	5756	1888 p.571 n.1	p.24 n.1	HELVI ZOS MOL
			XI	R,B	5753	n.2	n.2	HELVI ZOS MOL
			XI	B	5748	p.572 n.3		MOL
			XI	B	6185	n.4	n.4	STR
			XI	B	6181	n.5	n.5	STR
			XI	B	6186	n.6	n.6	STR
			XI	B		n.7	n.7	STR
			XII	R	5787	n.8	n.8	P C VITAL
			XI	B	5580	n.9	n.9	RVRIANVM
			XI	B	6063	n.10		
			XI		6252	n.11		
			XI	R,B	5767	n.12	n.10	
			XI	R,B	5980	n.13		
			XI	R,B	6163	n.14	n.11	
			VI	B	5718	n.15	n.12	HALLEX OPTIMA
						n.16		
Garden (p)	42	26	VIII	R	6017	1888 p.524 n.4	p.26 n.7	
			XIII	B	6330	n.5		
			XIII	B	6576	n.6		
			XI*	R,B	6232	n.7		
			XII	B	6535	n.8		
			XV	B	6508	n.9	p.26 n.1	
			VIII	B	6589	n.10	n.2	
			XIII	R	6384	n.11		
			VIII	R	5859	n.12 n.13	n.3	LVCR
			XI	R	5847	n.14	n.4	L HELVI ZOS
			XI	B	6212	n.15		VIR
			VII	B	5608	p.525 n.16	n.5	LV
			XII	B	6170	n.17	n.6	
			XI	B	6451	n.18		
			frag.	B	5991	n.19		
			VIII	B	5977	n.20		
			XI	B	6122	n.21		
			VI	B	5667	n.22		G F
			VII	B	5628	p.530 n.49		LV
			XI		6213	n.50	n.9	VIR
			XI	B	5858	n.51	n.8	
			XII	B	6247			
						p.530		stamp
Totals	114	60						

FIG. 8. AMPHORAE AND URCEI FOUND IN IX.ix.6-7/10

Color = color of inscription. Inscription = portion of inscription discussed in article. * Almost Shape XI.

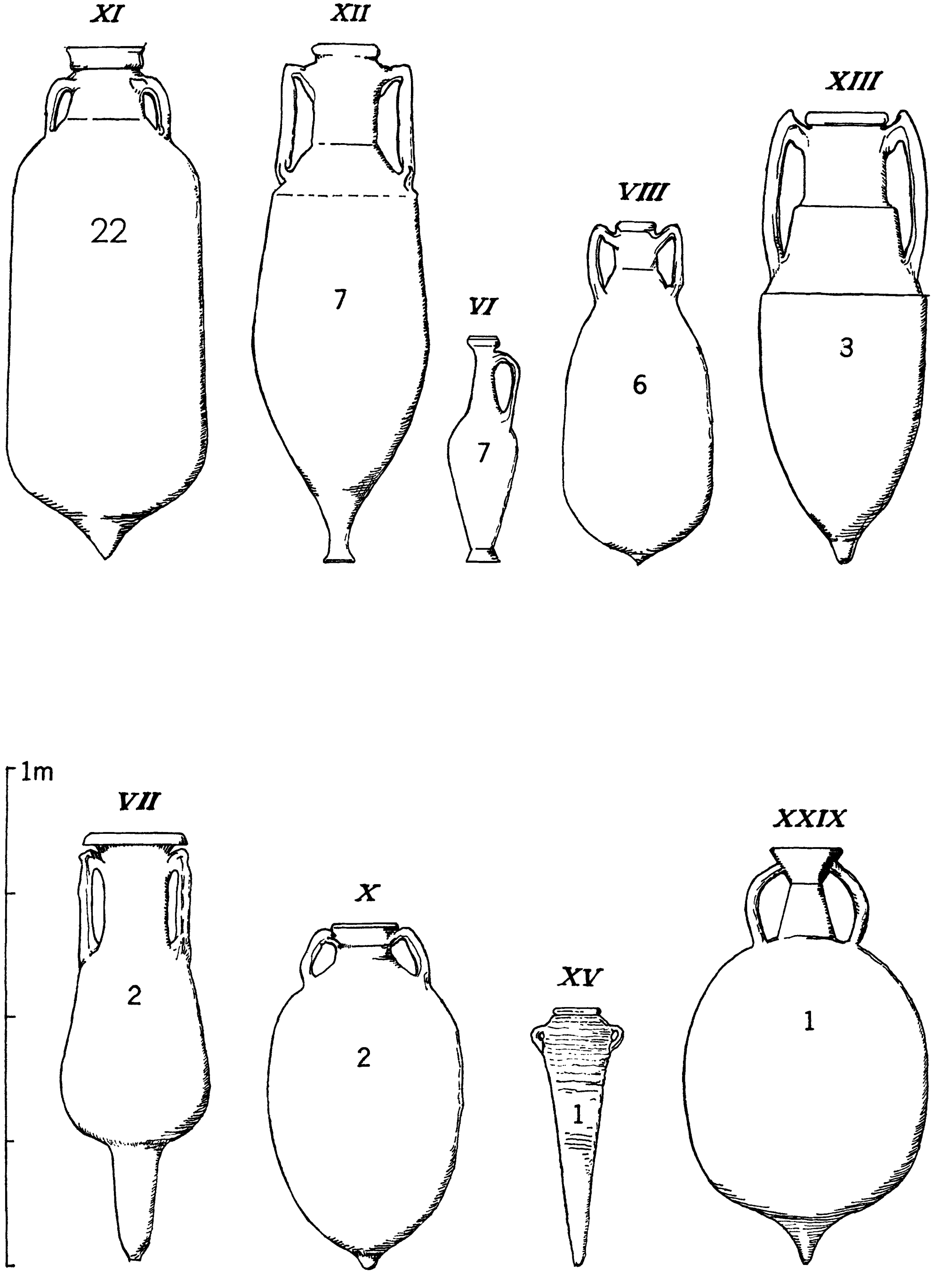

FIG. 9. VASORUM FORMAE

Roman numerals indicate the shapes of amphorae or urcei, as in *CIL* 4 Suppl. Plates 1,2; arabic how many of each shape were found in IX.ix.6-7 (an additional amphora is "almost XI," see Fig. 8). Shape XXIX is rare at Pompeii but frequently found at Rome. Drawing by Leona Crandall.

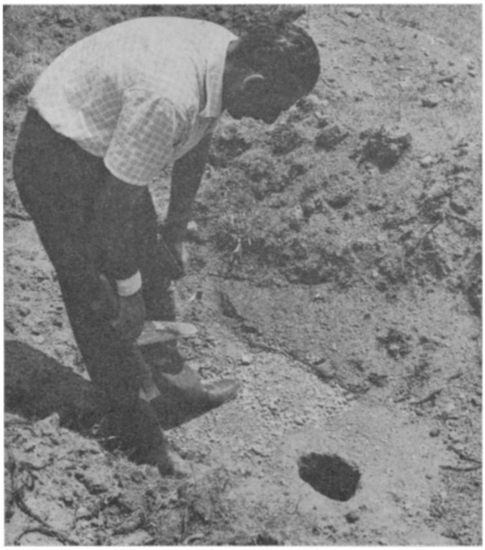

FIG. 10. CLEANING ROOT CAVITY

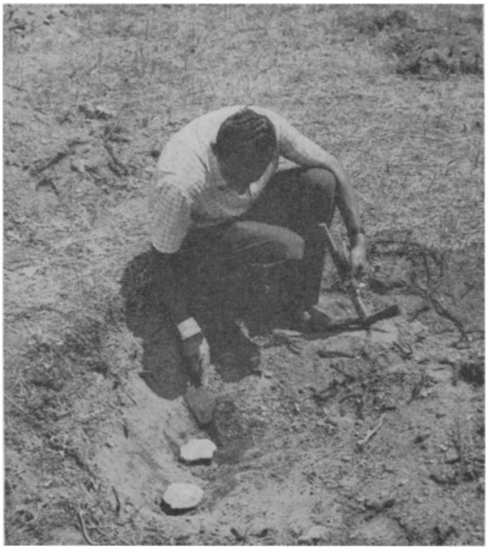

FIG. 11. CASTS OF GRAPEVINE ROOTS

tury ago. Because we undertook this project toward the end of the summer at Pompeii, and because of the very large amount of soil that it was necessary to remove before we reached evidence of the ancient roots, we did not undertake the excavation of the entire garden.

The grapes raised in the garden were probably made into wine. No remains of a press were found, but there were several elsewhere in the city, to which the grapes might have been taken. Perhaps the juice was extracted by simply treading on the grapes in a small portable wooden tub. This process is depicted in the vintage scene on the beautiful Blue Glass Vase found at Pompeii. The workmen who made the casts assured me that grapes crushed by bare feet produced much better wine than that made by a press, which bruised the seeds and gave the wine a bitter taste.

After the juice was extracted it was poured into large terra-cotta dolia until it was sufficiently fermented for use. The dolium found in the garden was probably used for this purpose.[44] According to Pliny the Elder (*N.H.* 14.134,136), the finest wines in Campania underwent fermentation in dolia exposed to the open air. When the wine was ready for use it was taken from the dolium and stored in amphorae. The dolium found in the garden is .9 meters high, and has a capacity of approximately 100 gallons, which would be much too large for the number of grapes probably raised in this garden. Mau reports a pile of lime found in the triclinium (1) at the time of excavation, and suggests that it was for use in making wine.[45]

One of the most interesting things about this garden is the little sacellum (Fig. 12) attached to the rear garden wall.[46] It is a small one-room building (3.11 m. by 3.45 m.; height varies 2.15 m. to 2.30 m.). The lararium niche, in a prominent place on the east wall, was immediately visible to a person entering by the door on the west. Offerings were made to the Lares and the Penates on the masonry altar in front of the niche. Above the lararium were two painted garlands[47]; although the household

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[44] The dolium is still in the garden (Fig. 12).

[45] Mau, *Röm.Mitt.* 22.

[46] Mau, *Röm.Mitt.* 5 (1890) 228-31; Sogliano, *op. cit.* 125.

[47] Most of the plaster has fallen, and only a part of one garland is now visible. See Mau, *Röm.Mitt.* 229, for drawing of the lararium with garlands.

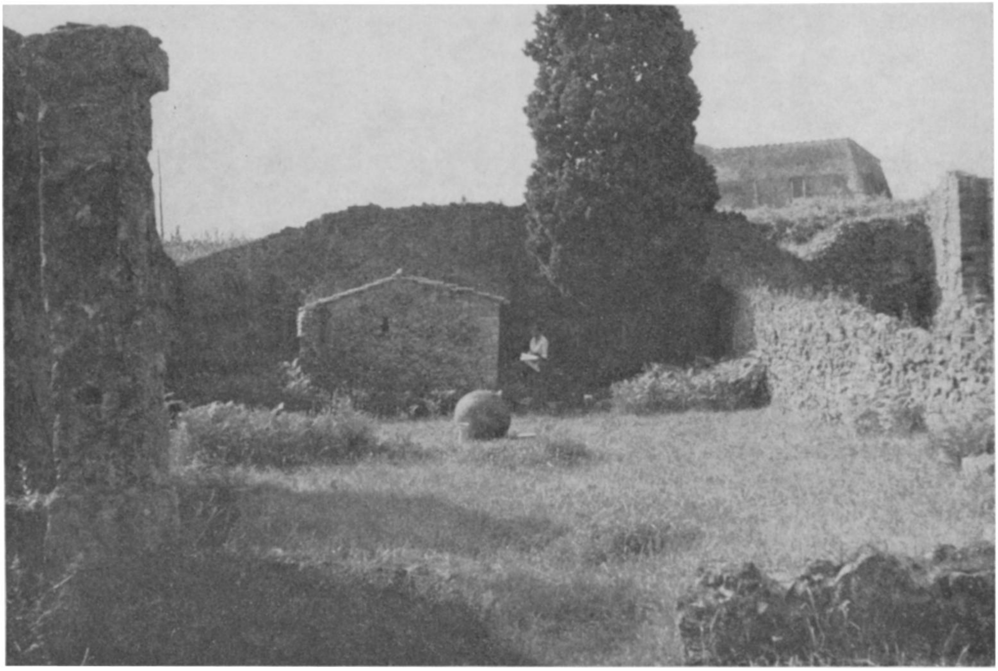

FIG. 12. SACELLUM IN GARDEN OF WINE-MERCHANT

shrines were decorated with fresh garlands three times each month, many had painted garlands as well. In fact, several nails were found on each side of the niche, apparently so placed to hold the fresh garlands. What deities were worshiped in this sacellum? Bacchus would seem to be a logical one. (The wine-producer A. Rustius Verus, who lived in the nearby House of the Centenary, adorned his lararium with a painting of Bacchus clothed with bunches of grapes, standing near vine-clad Vesuvius.[48]) The sole evidence regarding the deities worshiped in the sacellum is a little terra-cotta statuette found in the lararium, of a female figure, perhaps a goddess, garbed in a chiton and mantle, reclining on a couch (*kline*); her left arm rested on a cushion, and in her right hand she held a *patera umbilicata.* Similar figures have been found elsewhere at Pompeii, but it has not yet been possible to identify them.[49] It is of course not unusual for the excavators to find a lararium empty, for the little statues of the household deities were very small, and it would have been quite natural for Pompeians, fleeing the wrath of Vesuvius, to take their Penates with them for protection. The sacellum has a masonry bench built along most of the north wall and the north part of the east wall. Above the bench on the north wall are two arched niches, and above them a shelf on which were originally placed various glass vessels found by the excavators.

It is interesting to compare the garden of the *vinarius* with that of his neighbor to the west. The large number of surgical instruments found in this house, along with a wall painting (now destroyed) which depicted the friendly centaur Chiron and his pupil Achilles, whom he tutored in medicine, indicate that the occupant was a *medicus*.[50] The masonry triclinium built against the east garden wall suggests that this ancient Pompeian doctor enjoyed eating in his garden. It was not landscaped, however, as were those in the more elegant houses, nor was it devoted exclusively to pleasure. Sogliano[51] reports that at the time of excavation it was possible to see beds, separated by channels which served both for irrigation and for caring for the garden. Such beds show that this was a vegetable garden. Mau[52] says that he saw the holes left by the roots of what seemed to have been small trees. In Pompeii this would not be a contradiction, for in this sunny land vegetables regularly grow under the shade of trees.

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[48] George K. Boyce, *Pompeian lararia* (Memoirs of the American Academy in Rome 14 [1937]) 90; T. Frank, *op. cit.* 253.

[49] Boyce, *op. cit.* 91 and n.1.

It is quite possible that the two neighbors were relatives. A close examination of the construction of the two houses and of the garden walls shows that the properties were once joined, and that the wall dividing the two gardens was a later addition. This may be an example of a property divided between heirs. It would be quite natural for a freedman wine-dealer to have a relative who was a doctor, for physicians were usually freedmen. Both houses were modest, although the doctor had somewhat better paintings on some of his walls; both gardens were used for practical purposes. The humble *vinarius*, who operated one of the largest wine-shops in Pompeii, and his neighbor, a *medicus*, add another chapter to our knowledge of the social and economic life of Pompeii.

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[50] Sogliano, *op. cit.* (1887) 413; (1888) 516.
[51] Sogliano, *op. cit.* 516.
[52] Mau, *Röm. Mitt.* (1889) 11.

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Excavations in the "Foro Boario" at Pompeii: A Preliminary Report[*]

WILHELMINA F. JASHEMSKI

PLATES 33-34

The large *insula* (Region II, *Insula* v) to the north of the amphitheater at Pompeii is one of the most interesting in the city because of the speculation through the years as to its use. Located at the eastern edge of the city, just inside the Porta di Sarno (the ancient Porta Urbulana), it faces on the north the longest thoroughfare in the city—the busy Via dell'Abbondanza, which leads directly to the Forum at the opposite end of town. Few *insulae* in the entire city are as large; even the Forum is only slightly larger.

The first limited excavations in this *insula* took place in 1755.[1] The excavators, perhaps because they discovered the bones of large animals, identified the site as the *Foro Boario,* a name that still appears on the plan of the city distributed to tourists. In 1814 the south wall of the *insula* was excavated. In the center of this wall, directly across from the entrance to the amphitheater, was an entrance formed by two columns upon which rested a pediment, followed by a little vestibule with three arches; one of these gave access to a triclinium.[2] The excavators, no doubt influenced by their recent discovery of the triclinium tomb just outside the Herculaneum Gate, believed that this was the burial place of gladiators killed in the amphitheater.[3] A map of the excavations in 1817 shows the south wall of the *insula* excavated, and labels the site "triclinium" (ill. 1). On a more detailed map published in 1819 (ill. 2) the south wall of the *insula* to the north of the amphitheater and the triclinium are shown as excavated. The architect Luigi Rossini, on his plan of Pompeii showing the excavations up to 1830, labels the triclinium *triclinio funebre,* but labels the insula *recinto del Campo Boario.*[4] Others believed that the gladiators were given a public repast at the triclinium, and waited in the area nearby before going to possible death in the amphitheater.[5] Some scholars have believed that this *insula* also contained the cages of the animals used in the amphitheater, since this structure (which is the oldest amphitheater known) had no underground chambers for animals, such as are found in later ones.[6]

There were no further excavations in the area for 141 years. Then between December 1, 1954, and May 31, 1955, most of the *insula* was cleared,[7] with the exception of the northeast quadrant occupied by a large modern house (which can be seen in ill. 2), and a portion of the northwest corner, where there appeared to be an ancient building (pl. 33, fig. 1). The two rooms of this complex that were excavated had been equipped for making wine. This suggested that the *insula* might have been

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[*] An earlier draft of this paper was given at the Sixty-eighth General Meeting of the Archaeological Institute of America on December 28, 1966. The author wishes to acknowledge the grants from the General Research Board of the University of Maryland that have assisted her research at Pompeii. All photographs (figs. 1 to 7) are by Stanley A. Jashemski.

[1] A. Maiuri, *Pompei* (Novara 1928) 43: *scavato parzialmente nel 1755 e poi ricolmato.* The early excavators at Pompeii were primarily treasure-seekers, and records and reports of the excavations were indifferently kept. When Giuseppe Fiorelli became director of the excavations in December 1860, haphazard digging was brought to a stop. Miscellaneous manuscripts, notebooks and daybooks, describing the excavations from 1748-1860 were collected from both public and private sources, and published by Fiorelli under the title *Pompeianarum antiquitatum historia,* 3 vols. (Naples 1860-1864). There is no mention, however, of excavations in the *insula* to the north of the amphitheater in 1755. I have searched diligently, and thus far in vain for the evidence used by Maiuri for his statement regarding the 1755 excavations.

[2] *Pompeianarum antiquitatum historia,* ed. G. Fiorelli (Naples 1860) I:3, 150 (entry for May 8, 1814).

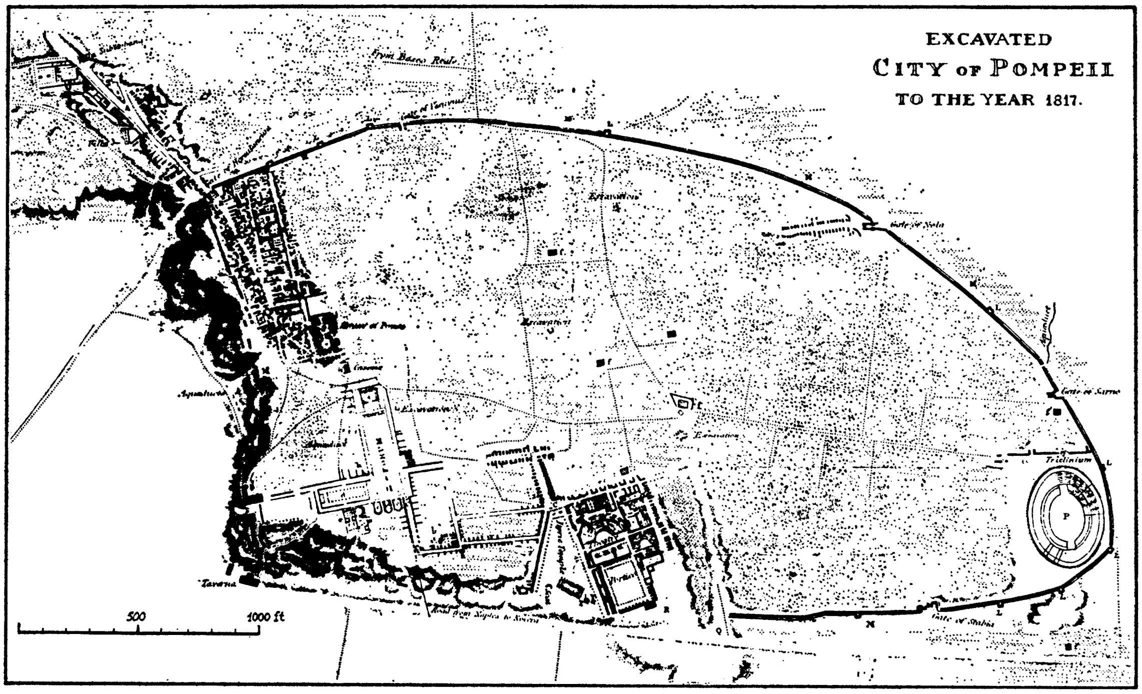
[3] *Ibid.* (supra n. 2).

[4] Luigi Rossini, *Le antichità di Pompei delineate su le scoperte fatte sino a tutto l'anno 1830* (Rome 1830) pl. III.

[5] Carlo Bonucci, *Pompéi décrite* (Naples 1828) translated from the 3rd Italian edition 189; Gaspare Vinci, *Descrizione delle ruine di Pompei* (Milan 1840) 152.

[6] Carlo Bonucci, *op.cit.* (supra n. 5); A. Maiuri, *op.cit.* (supra n. 1); M. Della Corte, *Pompeii, The New Excavations* (Pompeii 1944) 105-106; Della Corte, *Case ed abitanti di Pompei* (Pompeii 1954) 330.

[7] Carlo Giordano, *Giornale di scavo sistematico eseguito nell'area del Foro Boario da 1º Decembre, 1954 al 31 Maggio 1955* (unpublished).



Ill. 1. "Excavated City of Pompeii to the Year 1817," by J. Walker (W. Gell and J. P. Gandy, *Pompeiana, the Topography, Edifices, and Ornaments of Pompeii* [London 1875] pl. 1). Plan shows S wall of *insula* to N of amphitheater excavated

planted.[8] But the belief persisted that the area was the *Foro Boario,* or Cattle Market.

Only a subsoil examination of the entire area could definitely reveal its use. This I began in the summer of 1966 with the permission and encouragement of Professor Alfonso de Franciscis, Superintendent of Antiquities in Campania. In land under cultivation at the time of the eruption, it is possible to find evidence of the ancient roots, if modern plants have not been too destructive.[9] Volcanic ash makes the soil so fertile that an excavated area is soon covered with vegetation. The first growth is quite charming—the beautiful wild flowers of Campania, some so delicate that they are visible only in the early hours of the morning. But soon the everpresent Spanish broom (*Spartium junceum* L.), tangles of brambles, and young saplings put down tenacious roots, and these destroy all evidence of the ancient ones. Fortunately this *insula* had much less heavy vegetation than most, so I was hopeful that we might still be able to determine whether it had been planted in A.D. 79. We made a trial excavation along the east wall where there was a substantial covering of the original volcanic debris. Digging down through more than four feet of lapilli we came to the ground level of A.D. 79. Almost immediately we uncovered the cavity left by the decay of a large root (j in ill. 3). When the trees and plants growing at the time of the eruption died, their roots decayed, and the volcanic debris which covered the site gradually filled the cavities. After we had removed all the lapilli with special tools we found that the cavity was a perfect mold of an ancient tree root (30 cm. in diameter at ground level).

Encouraged by our initial success, we continued the trench along the east wall, but were disappointed to find that the undisturbed covering of lapilli soon ended. The excavators in 1955 had removed the volcanic material down to the original ground level, and later covered the area with backfill. We eventually found several small root cavities ranging from 4 to 9 cm. in diameter, but the backfill was deep and compacted, and the results discouraging.

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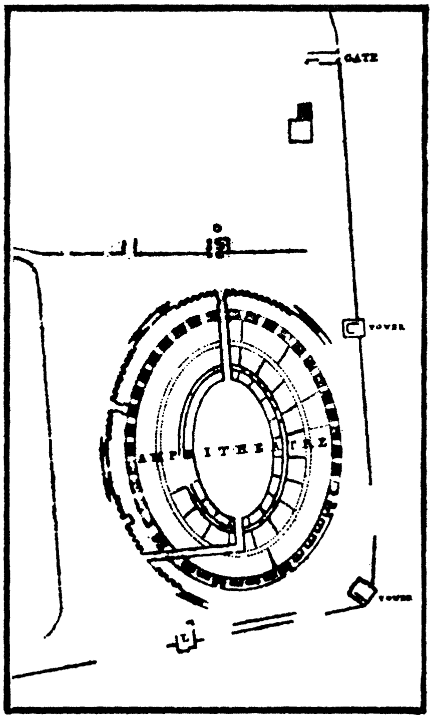
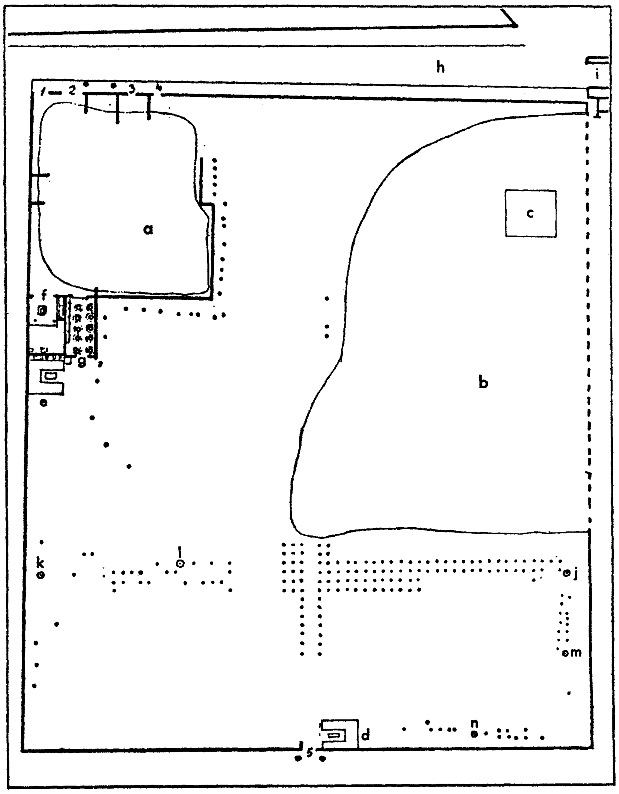
[8] A. Maiuri, *Pompeii* ("Guide-books to the Museums and Monuments of Italy"; 7th ed. Rome 1954) 83.

[9] For a description of the technique used, see W. Jashemski, "The *Caupona* of Euxinus at Pompeii," *Archaeology* 20 (1967) 36-44.



Ill. 2. Detail of "The Plan of the City of Pompeii as Excavated in the Year 1819" (Gell and Gandy, *Pompeiana*, opp. p. xiv)



Ill. 3. Region II, *Insula* v in 1966. a,b) unexcavated areas; c) modern house; d,e) masonry triclinia; f) room with wine press; g) shed with 10 embedded dolia; h) Via dell'Abbondanza; i) Porto di Sarno. Dots show grapevine roots; circles (j-n) tree roots

We decided to explore the western half of the *insula.* Here the original level was scarcely below the surface, and had been badly damaged by the passage of trucks at the time of excavation. Even so, we eventually found another tree root cavity, about 30 cm. in diameter, near the west wall (k in ill. 3). In the same area we discovered a number of smaller root cavities with diameters varying from 4 to 8 cm. Our first complete row of root cavities was found, however, along the east wall of the unexcavated complex. These were from 4 to 6 cm. in diameter. We next removed the heavy growth along the south wall of this complex, most of which came from a huge Spanish broom, twined with brambles. Here we found another row of cavities, 6 to 14 cm. in diameter, complete, except for the last one, which had been destroyed by the root of the huge Spanish broom bush. This we removed before we left Pompeii, so that it could not put out new growth and do further damage.

If this *insula* had been planted elsewhere than along the walls we felt that we would find the evidence by digging trenches into the center of the area, in line with the root cavities that we had just discovered so easily. But again we were disappointed, for when we dug two trenches toward the center, we found the fill very compacted, and nothing preserved underneath. We tried another trench at the foot of the unexcavated portion, and found three small root cavities, but could find no more. By this time there was a general feeling that the project was futile, and the expenditure of time and money too great for the few root cavities found. Roots along the wall proved nothing about the use of the area. Three roots in the center were encouraging, but did not disprove the identification of the site as the Cattle Market.

We decided to work in another garden, which yielded important initial results. But most of this garden was overgrown with huge Spanish broom bushes, which had completely destroyed the ancient root cavities. We considered exploring several other areas, but the thought persisted that none were as important or as significant as the one we had abandoned.

We returned and continued digging toward the center of the *insula* from the west wall. After digging through another sterile area where the cover was shallow, and the original level badly disturbed, our luck changed and we found a generous scattering of small root cavities (4 to 10 cm. in diameter), all the way to the center of the *insula*. We also found a tree cavity (1 in ill. 3), which when emptied proved to be the largest that we had yet found; its longest dimension at ground level was 38 cm. long and the root was deep. We filled the cavity with cement and it took seven large bucketsful. After the cement had stood for three days, the soil was pulled away from the cast, and the shape of the root that was growing when Vesuvius erupted, was revealed (pl. 34, fig. 2). A workman remarked that it had the shape of a poplar tree root that he had recently dug up on his farm. We also emptied and made casts of the smaller root cavities, which appeared to be vine roots. It began to look as if there had been considerable planting in the Cattle Market.

We decided to continue the trench all the way across the *insula*. Almost immediately we found eight evenly spaced roots (4 to 10 cm. in diameter) and, as we continued to dig, row after row of ancient root cavities dramatically appeared, until we finally reached the east wall (pl. 33, fig. 3). We then proceeded to widen our trench on both sides. As we approached the gate, we understood why we had been unable to find one row of roots. This row had been left unplanted and formed a path leading directly to the entrance (pl. 34, fig. 4). Columella,[10] in his manual on agriculture, recommends that the vineyard be divided by footpaths, for the use of the laborers in carrying stakes, repairs for the frames, or fruit. He suggests that the vineyard might be broken up into divisions of one half a *jugerum*, which is approximately the size of each quarter of our vineyard.

A count of the cavities found in the summer of 1966 shows five large tree roots, and over 200 vine roots (ill. 3), almost twice that number of vine roots if the second cavity found in most locations was a root and not a stake. It is hoped that the carbonized material that was in some cavities will be found in sufficient amounts, next time, to help solve this problem. We also hope to find complete carbonized seeds. The mathematical precision with which the roots were located suggests that the ancient owner had planted with the manual of Columella in hand. He recommended a quick method for laying out a vineyard, by using a line stitched with purple or other bright color, at the same intervals that roots were to be planted.[11] But our ancient owner did not space his vines according to the recommendations of Columella, who suggested that rows be at least five feet apart if cultivated by hand, at least seven feet apart if cultivated by oxen or plow.[12] This vineyard was obviously cultivated by hand, but the plants are closer than five feet. Pliny the Elder, who was acquainted with this area, may well have been reflecting local practice when he said that in a rich soil vines should be planted four feet apart.[13] The distance between our vines is almost exactly four Roman feet.

The small building equipped for the production of wine undoubtedly belonged to the owner of the vineyard. The room to the west has fittings for a wine-press similar to the one that has been restored in the Villa of the Mysteries.[14] After the juice was extracted it was stored for fermentation in the ten dolia imbedded in the dirt floor of the adjacent shed (pl. 34, fig. 5 and ill. 3). The unexcavated area in the northwest corner of the *insula* probably contains the winegrower's home (pl. 33, fig. 1 and ill. 3). The shops fronting on the Via dell'Abbondanza may indicate where he sold wine to passersby; the election notice (to the right of entrance 3 in ill. 3) recommending Helvius Sabinus for aedile[15] may represent his political preference. Individuals were no doubt served in the triclinium across from the amphitheater during the performances,[16] and they may also have sampled wine in the triclinium just outside the room in which the wine was fermented.

Perhaps it is not premature to speculate concerning the amount of wine that was produced in this vineyard which occupied such a valuable piece of land inside the city walls. If the entire *insula*, with the exception of the area used for making wine, and the unexcavated area which probably contains the owner's home, was under cultivation, the vineyard was a little over two *jugera* in size. Columella[17] recommended that any vineyard that did not produce at least three *cullei* of wine per *jugerum* should be uprooted. (Three *cullei* would be 412½ gallons; a *jugerum* contains 28,800 square feet.) According to Columella's minimum permissible yield this vineyard should then have produced six *cullei*. But because of great fertility of the soil, and the intensive cultivation possible in a small vineyard worked by hand, it quite possibly produced two or three times that much, perhaps even nine or more *cullei* per *jugerum*.[18] We learn from Columella[19] that on Seneca's estates one *jugerum* produced eight *cullei* of wine. (Earlier, Cato and Varro report yields in Italy of ten to fifteen *cullei* of wine per *jugerum*.)[20] The capacity of the dolia imbedded in the floor of our *cella vinaria* may be significant. Each dolium has a capacity of approximately 275 gallons, which is equivalent to two *cullei* (forty amphorae).[21] The ten dolia then had a capacity of twenty *cullei*, or 2,750 gallons, which may well approximate the annual yield of the vineyard.

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[10] *De re rustica* 4.18.

[11] *De re rustica* 3.15.1.

[12] *De re rustica* 3.13.3.

[13] *Naturalis historia* 17.171.

[14] For a description of this press see A. Maiuri, *La villa dei misteri*, 3rd ed. (Rome 1960) 41-44.

[15] M. Della Corte, *Notizie degli scavi* 12 Ser. 8 (1958) 94, no. 77.

[16] M. Della Corte, *Case ed abitanti di Pompei* 330.

The planting pattern found in this vineyard is strikingly similar to that used in the vicinity of Pompeii today. Even the depressions, sometimes three, often four, that we found still perfectly preserved around the ancient roots (pl. 34, figs. 6 and 7), were recognized by our workmen as similar to the depressions that they put around their vines to hold water. Modern vineyards nearby probably look much as our vineyard did in antiquity. Trees planted at the edges of these vineyards, and at intervals inside, remind us of the five trees that we have found. In addition to a variety of fruit trees, the modern winegrower often plants poplars to supply stakes for his vines. In some vineyards in the vicinity of Pompeii today, frames support the vines, and it is possible that the nails that we found secured such frames. It is hoped that further excavation of the entire site will clarify the planting pattern, and solve other unanswered questions.

The laying bare of an ancient vineyard is of the greatest interest; especially significant is the first archaeological confirmation of the exact planting pattern recommended in the Roman agricultural manuals. But the discovery of large cultivated areas inside the city walls,[22] contrary to what has been written and generally believed regarding the "increase in population and shortage of land . . . in Italian cities in the early Empire,"[23] is of great significance for the study of land use in the ancient city.

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[17] *De re rustica* 3.3.11.

[18] John Day ("Agriculture in the Life of Pompeii," *YCS* 3[1932] 183) in estimating the size of the villa at Boscoreale assumes a yield of only three *cullei* of Aminean wine per *iugerum*, but says that "Aminean vines, although native to Campania's extremely fertile soil, were noted for the slight amount of wine which they produced."

[19] *De re rustica* 3.3.3.

[20] Varro, *De re rustica* 1.2.7.

[21] Ancient amphorae varied greatly in size, but when used as a Roman measure an amphora was equivalent to six gallons and seven pints, or one-twentieth of a *culleus*.

[22] For the discovery of a vineyard in a *caupona* garden at I. xi. 10, see W. Jashemski, *op.cit.* (supra n. 9). For evidence of a vineyard in the garden of a *vinarius* at IX. ix. 6, near the Nola Gate, see W. Jashemski, *CJ* 62(1967) 193-204. These vineyards, however, were much less precisely planted.

[23] T. Frank, *An Economic Survey of Ancient Rome*, Vol. 5, *Rome and Italy of the Empire* (Baltimore 1940) 256. See also Carrington, *Pompeii* (Oxford 1936) 62-79, who says that Pompeii had become a congested commercial town, with an increase in population, a shortage of land, and a tendency toward vertical architecture.

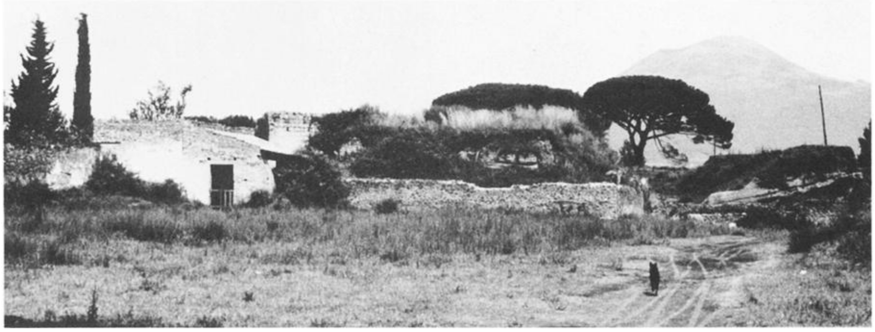


Fig. 1. "Foro Boario" from S looking toward Vesuvius; unexcavated area upper left (NW quadrant)

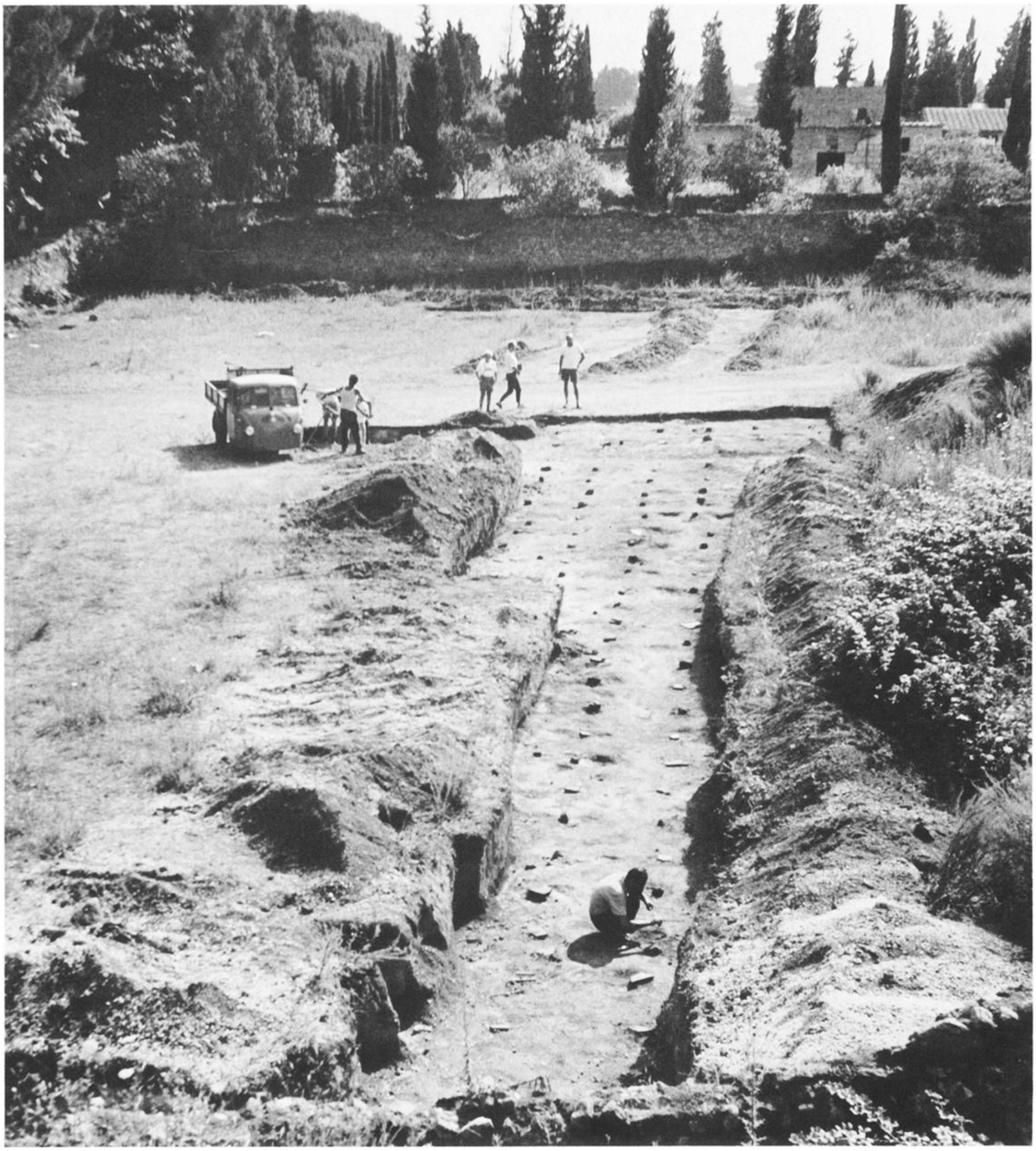


Fig. 3. Partly excavated vineyard in "Foro Boario." Stones cover cement casts of grapevines and show their location. See ill. 3

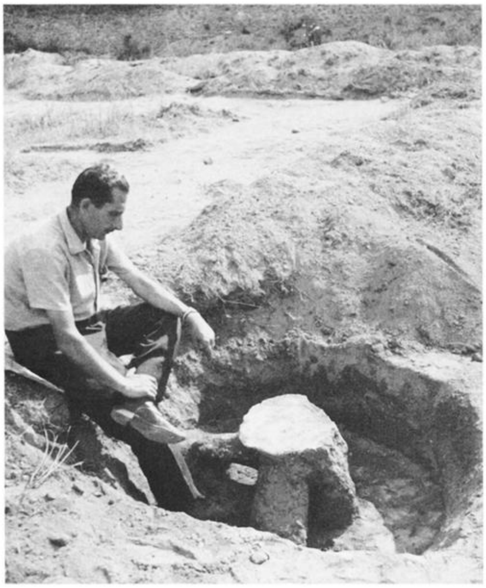


Fig. 2. Cement cast of large tree root

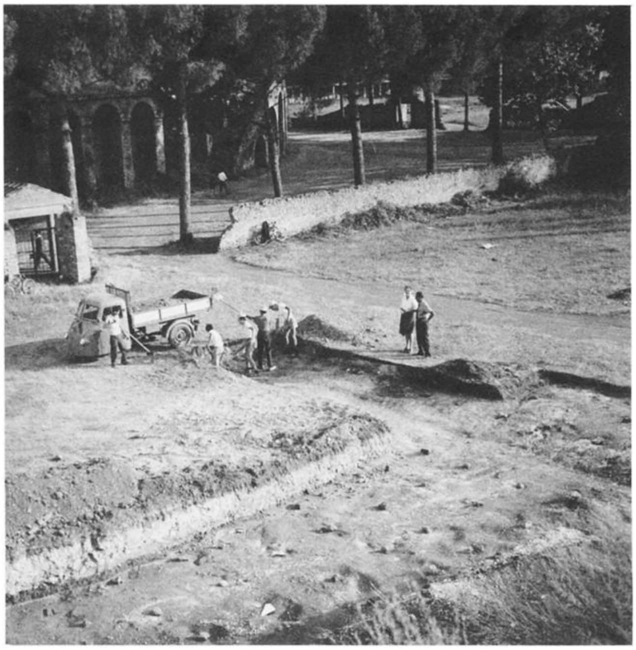


Fig. 4. Path to porticoed entrance of "Foro Boario"; N entrance of amphitheater opposite, Palaestra upper right

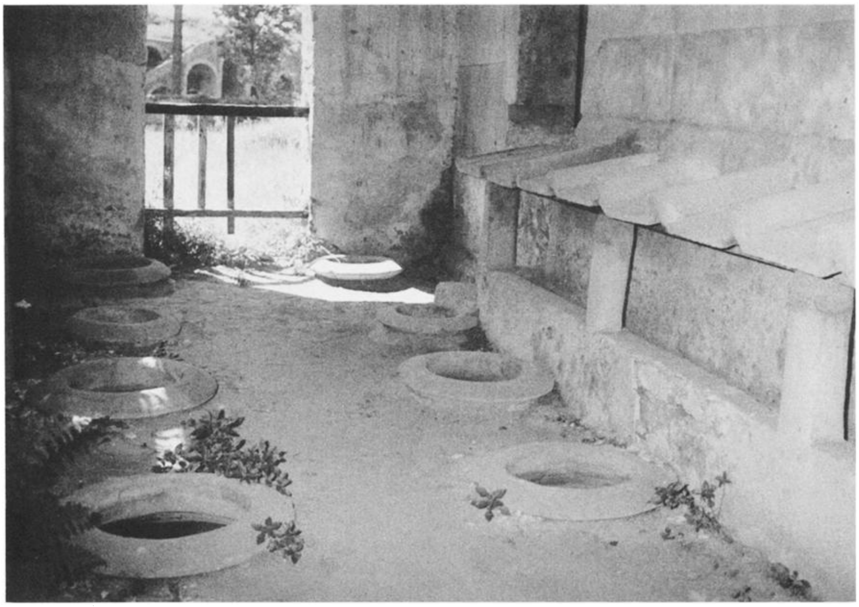
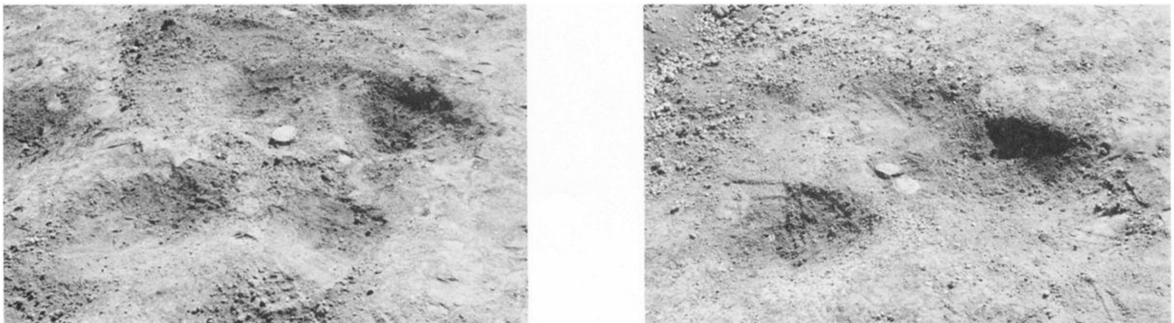


Fig. 5. Shed with ten dolia embedded in dirt floor



Figs. 6-7. Partly excavated casts of grapevine roots showing ancient depressions for water

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TOMB GARDENS AT POMPEII

"It is quite wrong for a man to decorate his house while he is still alive and not to trouble about the house where he must make a longer stay."

THE ANCIENT TRAVELER approaching a Roman town passed by the tombs of many former inhabitants before he reached the city gates. It is surprising to the modern visitor, accustomed as he is to cemeteries located in quiet, secluded places, to find ancient tombs located alongside busy roads. But it would seem that even in death the ancient Roman desired to share the bustling activity of the living. Many of the elaborate tombs of noble families that lined the Appian Way outside of Rome could still be seen in the sixteenth century, but only a few remain today. At Ostia two stretches of road lined with tombs have been excavated, and two tombs have been found outside the Porta Marina. A necropolis has also been uncovered at nearby Portus, along the road that led from the imperial harbors to Ostia. Tombs and objects originally from tombs have been found throughout the Roman Empire, and tombstones and tomb furnishings can be seen in many museums.

At Pompeii, preserved by the eruption of Vesuvius, one can visit tombs located on roads leading out of five city gates and get the full impact of the importance of the tombs in the activities of the living. The famous Street of Tombs outside the Herculaneum Gate, excavated between 1763 and 1838, is well known. Here (along slightly more than 400 meters of road) beautiful villas, luxurious tombs, tombs of the humble, and busy shops were found side by side (fig. 1). In more recent years (1954–1956), over 275 meters of the magnificent necropolis just outside the Nuceria Gate have been laid bare (fig. 2). Fortunately the road to Nuceria paralleled the city walls for some distance, which made possible excavation of the necropolis in land owned today by the state.[1] Tombs have also been found outside the Vesuvius Gate, the Nola Gate, and the Stabian Gate; but at these gates only a limited amount of land was available for excavation. Tomb monuments varied greatly, whether built for a single individual or, as is more often the case, for an entire family and, often, their freedmen. They might take the form of a little temple, an altar on a high base, a mausoleum, a commemorative arch, a chamber with niches, or a semicircular stone bench (*schola*). The interiors of the tombs reflect the decoration of contemporary

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[1] In 1886–1887 six impressive tombs belonging to this same necropolis were excavated to the east of the Amphitheater. They lay on both sides of the road which ran east from the Nuceria Gate, in land that is now private property. Fortunately they were carefully published by A. Sogliano (*Notizie degli scavi di antichità* [1886], 334–337; [1887] 33–40, 452–458) and by A. Mau (*Mittheilungen des Kaiserlich Deutschen Archäologischen Instituts, römische Abtheilung* 3 [1888] 120–149); for today they are so overgrown with brambles and saplings that I found them difficult to locate and impossible to study.

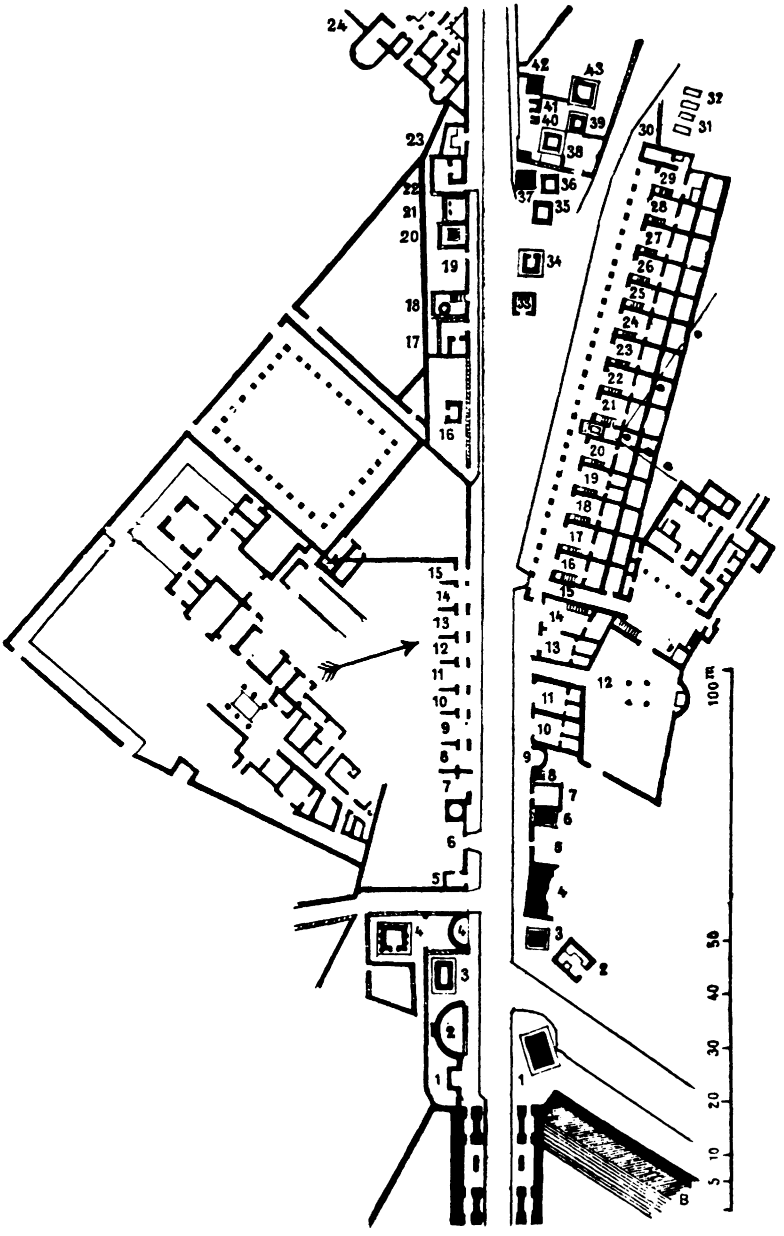

Fig. 1. STREET OF TOMBS OUTSIDE THE HERCULANEUM GATE.

Left side:
- 5–15. So-called Villa of Cicero
- 16. Unfinished tomb
- 21. Tomb of Istacidius Helenus
- 22. Tomb of enclosure with triclinium
- 24. Villa of Diomede (in part)

Right side:
- 6. Tomb of the Garlands
- 8. Tomb
- 9. Sepulchral niche
- 12. Villa with the mosaic columns
- 10, 11, 13, 14. Shops
- 16–30. Shops and inn
- 33. Enclosure (*ustrina?*)

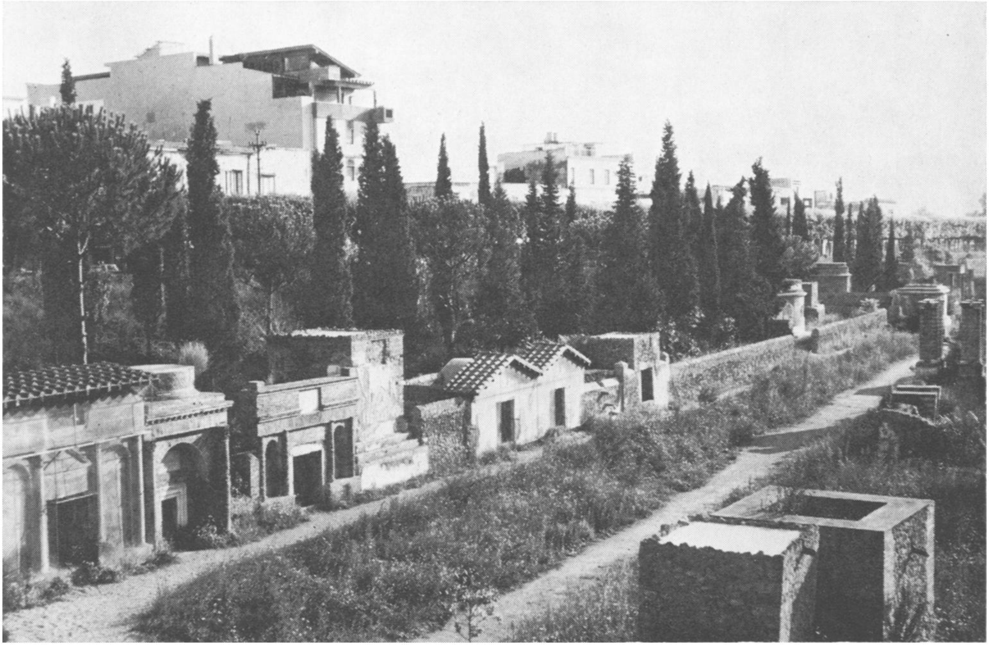

FIG. 2. STREET OF TOMBS OUTSIDE THE NUCERIA GATE

houses. Prized possessions were often put in the tomb, or burned on the funeral pyre,[2] for it was believed that the dead in some way continued to inhabit the tomb and to enjoy the offerings made in their honor.

Nothing of sadness pervaded a Roman cemetery, for by the tombs passed all the jostling, busy traffic entering and leaving the city gates. One gets the impression that funeral monuments, as elaborate and luxurious as the family could afford, were deliberately planned to attract the attention of the passerby and impress upon him the deeds and virtues of the deceased. Tomb inscriptions were even addressed to the passerby:

> This monument was made for Marcus Caecilius.
> Stranger, I am pleased that you stop at my resting place.
> Good luck and good health to you; may you sleep without a care.[3]

Nor did it seem incongruous to use the tombs as public bulletin boards. At Pompeii electoral notices backing specific candidates, as well as announcements of gladiatorial combats to be held in the Amphitheater, or in the neighboring towns of Nuceria, Herculaneum and Puteoli have been found painted in bright red letters on the tombs. There was even a "lost and found" ad:

> If anybody lost a mare with a small pack-saddle, November 25, let him come and see Quintus Decius Hilarius, freedman of Quintus Decius, or . . . , freedman of Lucius, on the estate of the Mamii, this side of the bridge over the Sarno.[4]

Tombs were frequently planned with the convenience of the survivors in mind, for the tomb was the site of various festive occasions, beginning with the banquet held after the funeral. Subsequent feasts were held on the birthday or on the anniversary of the death of the deceased.[5] It is not unusual to find tomb monuments equipped with seats, or taking the form of benches (*scholae*). Here relatives might come and celebrate holiday or memorial festivals, or weary travelers rest, and perhaps think of the departed. The tomb monument of Gnaeus Vibrius Saturninus,[6] on the Street of Tombs outside the Herculaneum Gate, was a masonry triclinium (fig. 1), similar to those built for outdoor dining in the gardens of many homes at Pompeii. The triclinium provided an ideal place for banquets in honor of the deceased. The walls of the enclosure around the triclinium were decorated with plants, animals and birds. A tomb monument in the necropolis outside the Nuceria Gate was likewise designed to provide a convenient place for funeral banquets.[7] Permanent triclinia have also been found in a number of tombs at Ostia (see tomb 32 in fig. 7), as well as ovens and wells placed there for the convenience of those preparing the commemorative feasts.[8] The tombs were the site of general festivities at various times throughout the year. During the *Parentalia*,[9] a Roman feast of All Souls, which was celebrated from February 13 to 21, each family brought flowers and food to its tombs. On the *Rosalia* (or *Rosaria*),[10] roses, and on the *Violatio* (or *Violaria*),[11] violets were brought to the tomb, lamps were lighted, offerings were made to the dead,[12] and the relatives feasted together.[13]

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[2] The Samnite graves (400-90 B.C.) found at Pompeii show that these inhabitants practiced imhumation, but the Roman tombs indicate that cremation was the practice. See Pio Ciprotti, *Conscere Pompei* (Rome 1959), p. 105 f.

[3] *CIL* 1.1202 (2nd ed.). Marcus Caecilius was buried on the Appian Way at Rome.

[4] *CIL* 4.3864. Translation from A. Mau, *Pompeii, its life and art* (New York 1907), p. 436. This advertisement was found on one of the tombs to the east of the Amphitheater (see n. 1).

Both the ancient authors and inscriptions speak of the gardens that adorned the tombs. Martial (1.116.1) speaks of the "grove and fair acres of tilled land" (nemus . . . et culti iugera pulchra soli) surrounding the sepulchre of Antulla. Tomb inscriptions mention the tomb garden surrounded by an enclosure or wall (hortus cinctus maceria).[14] It is not surprising that the ancient Roman, for whom gardens were so important in life, would likewise surround his final resting place with a garden. Trimalchio gave instructions for his monument to have a frontage of 100 feet, and to be 200 feet in depth, for: "I should like to have all kinds of fruit growing round my ashes, and plenty of vines. It is quite wrong for a man to decorate his house while he is still alive, and not to trouble about the house where he must make a longer stay."[15] Similarly, an inscription from Cirta tells how a Roman in Africa planned his tomb: "On my tumulus bees shall sip the thyme blossoms, the birds shall sing pleasantly to me in verdant grottoes; there buds the laurel, and golden bunches of grapes hang on the vines."[16]

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[5] For a discussion of Roman funeral practices see J. Marquardt, *Das Privatleben der Römer* (2nd ed. by A. Mau, Leipzig 1886), p. 340–388 and Edouard Cuq, s.v. *funus*, in Daremberg and Saglio, *Dictionnaire des antiquités grecques et romaines d'après les textes et les monuments* (hereinafter referred to as *D-S*).

[6] G. Fiorelli, *Descrizione di Pompei* (Naples 1875), p. 409–410; *CIL* 10.1033.

[7] R. Étienne, *La Vie quotidienne a Pompéi* (Monaco 1966), p. 370. This tomb enclosure can be seen in fig. 2. It is on the far side of the street, directly to the right of the two tombs with pediments.

[8] R. Meiggs, *Roma Ostia* (Oxford 1960), p. 461. The well also provided water for cleaning the tomb.

[9] Ovid, *Fasti* 2.533 f.; Cic., *Phil.* 1.6.13; K. Latte, *Römische Religionsgeschichte* (Munich 1960), p. 98.

[10] See M. P. Nilsson, s.v. *Rosalia*, in *RE*, where all the references are brought together.

[11] Ibid.

[12] Libation tubes leading to the cinerary urns, through which the relatives could pour offerings of wine or oil, have been found in the Pompeian tombs. See Mau, op. cit., p. 429–430, 434–435.

[13] Remains of such banquets have been found in Pompeian tombs. Mau (op. cit., p. 414) reports finding shells of oysters and other shellfish. See below, n. 40, for remains of funeral banquets found at Ostia.

[14] *CIL* 6.13823, 10876; 10.2244; *Notizie degli scavi di antichità* (1883) 345 (see below, n. 20).

[15] Petronius, *Satyricon* 71 (Loeb transl.) The measurements of tomb plots mentioned in the Latin sources are given in Roman feet in this article. One Roman foot (*pes*) is 11.65 English inches.

The plots of ground on which the tomb monuments were built varied greatly in size. Some were very small, others quite large. Tomb inscriptions frequently give the size of the plot as well as details regarding the garden. Gaius Hostius Pamphilus, a doctor of medicine, and freedman of Gaius, bought a monument at Rome for himself, and for Nelpia Hymnis, freedwoman of Marcus, and for all their freedmen and freedwomen and their posterity. The plot with a frontage of thirteen feet and a depth of twenty-four feet is referred to as both their "farm" and their "gardens."[17] Although Trimalchio habitually dealt in hyperboles, his tomb garden is not excessively large for an individual of his pretensions, and it may be similar to some that he had seen in Campania.[18] The garden or orchard surrounding the tomb of Aquilia, wife of Caricenus (whose tomb inscription was found at Lavinium), was even larger than Trimalchio's: the plot was ninety-eight feet wide, and 230 feet deep.[19] A tomb garden at Rome also reminds us of Trimalchio's garden, for it was planted with vines and fruit, as well as with flowers and greenery. But even Trimalchio's garden, which was to have a sundial (so that anyone who looked at the time would have to read his name) and a place for banquets, lacked the luxurious portico and the elaborate furnishings of the Roman garden.[20]

It is not at all unusual to hear of large tomb gardens, beautifully landscaped with all the embellishments that decorated the gardens of the living: shaded triclinia, statues, sundials, pools, fountains, formal plantings, and homes for caretakers.[21] Sometimes the tomb garden was planted in fruit, flowers, or vegetables, and the income designated for the *tutela*[22] or maintenance of the tomb. We also hear of individuals setting up a foundation to supply the capital for the maintenance of their tombs, for the lamps lighted at the anniversary feasts, and for the food used at the celebration of these feasts.[23] Probably more often this was the responsibility of the family. The preserved part of the will of a man from Andemantunnum (modern Langres) gives us the details about a large tomb and its gardens in early second-century Gaul, along with the provisions for their maintenance.[24] The chapel (which contained a greater than life-size seated statue of the deceased), the tomb and the grounds (which included orchards and lakes) were to be cared for by three landscape gardeners and their apprentices. Maintenance of the tomb and grounds was to be provided by the nephew of the deceased and his heirs. Annual contributions of all the freedmen and freedwomen of the deceased and of his nephew and of his heirs were to pay for the sacrifices and banquets to be held on the first day of April, May, June, July, August and October. Everyone was required to stay until all the food and drink was consumed!

If the tomb plot was small, and the majority were, it was probably planted simply —perhaps a cypress tree, or some evergreen shrubs, and a few flowers. Flowers of all kinds adorned the tomb built by the shepherd for the gnat in the *Culex*.[25] The plants used by the shepherd in this fanciful tale

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[16] *CIL* 8.7854. Transl. from L. Friedländer, *Roman life and manners under the early empire* (London n.d.), 3, 301.

[17] *CIL* 1.1319 (2nd ed.): Haec est domus aeterna, hic est fundus, heis sunt horti, hoc est monumentum nostrum.

[18] See A. Maiuri, *La Cena di Trimalchione* (Naples 1945), who places the *Cena* of Trimalchio in Puteoli, during the time of Nero, and uses the evidence from Pompeii to interpret the text of Petronius.

[19] *Notizie degli scavi di antichità* (1883) 345: hortulus sive pomarium quod est maceria cinctum.

[20] *CIL* 6.10237.

[21] See Marquardt, op. cit., p. 369–370, for references.

[22] Quintilian 7.9.5; *CIL* 5.2176.

[23] Marquardt, op. cit., p. 369.

[24] *CIL* 13.5708.

[25] *App. Verg. Culex* 385 f.

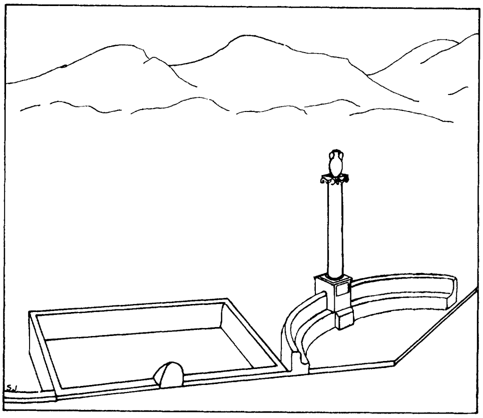

FIG. 3. TOMB MONUMENT OF AESQUILLIA POLLA.

were those favored by the Romans, the acanthus, the blushing rose, violets of every kind, myrtle, hyacinths, saffron, laurel, oleanders, lilies, rosemary, the savin (*herba Sabina*),[26] the marigold, glistening ivy, the amaranth, the everflowering laurustine (*tinus*),[27] and the narcissus. The plantings sound as if they had been carefully chosen to provide a succession of bloom against an evergreen background throughout the changing seasons. It would be interesting to know how Geminius Eutyches, a nursery-gardener at Rome, planned to landscape his twenty foot square tomb plot.[28]

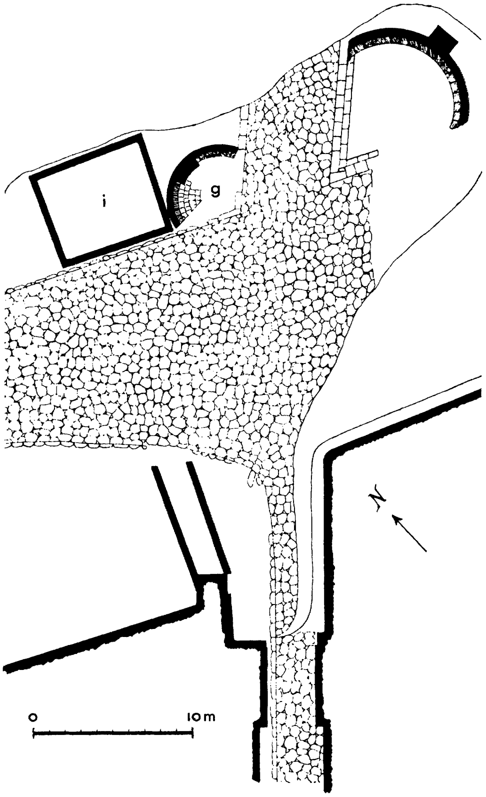

FIG. 4. PLAN OF TOMBS OUTSIDE THE NOLA GATE (from *Notizie degli scavi* [1910] 386): g. *schola* of Aesquillia Polla, i. tomb garden.

Tomb gardens are so well known from the literary and epigraphical evidence that one might rightly expect that at Pompeii, where so many tombs have been excavated, it would be possible to find many tomb gardens. Maiuri was undoubtedly safe in speaking of the "semicircular *exedra*," the "raised *ara*," and "the sumptuous mausoleum of patrician families, surrounded by funerary statues and animated by scented funeral *viridaria*"[29] on the Street of Tombs outside the Herculaneum Gate, but the actual locations of such gardens are difficult to determine. In fact, no special study has been made of Roman tomb gardens, and they are only incidentally mentioned by modern scholars. Spano believed that he had located a few. Just outside the Nola Gate, the duovir Numeris Herennius Celsus, had erected a beautiful semicircular stone bench (*schola*), surmounted by a graceful Ionic column, as a tomb monument for his young wife, Aesquillia Polla, who lived only twenty-two years. To the left of the tomb, enclosed by a low wall, was a little rectangular area filled with soil (fig. 3, 4). This Spano believed to be the funeral garden of the tomb.[30] Two similar funerary monuments had been excavated earlier, just outside the Stabian Gate; the presence of a third *schola* nearby was reported, but it was impossible to excavate it because it lay under a modern house.[31] The *schola* nearest the Stabian Gate, we learn from the inscriptions on the two boundary stones at the corners of the lot, was built for Marcus Tullius by order of the city council.[32] This was probably the M. Tullius who built the Temple of Fortuna Augusta at his own expense for the city of Pompeii. The city, which owned the land for one hundred feet outside the city wall, frequently granted some of this area as a tomb site for a prominent citizen. Behind the *schola* of M. Tullius is an almost square enclosure, bounded on one side by the city wall, and on the others by a low wall (fig. 5). The second *schola*, built for the duovir M. Alleius Minius on land voted by the city council, had a similar enclosure at the back (fig. 5). Mau believed that the urns containing the ashes of the deceased had been buried in these enclosures.[33] Spano thought the enclosure back of the tomb of M. Tullius was a garden; and, twenty years after it had been excavated, he planted it with roses, anemones and myrtle, first examining the subsoil.[34] But no funeral urn was found, nor have they been located for any of the *scholae* at Pompeii.[35] The marble urn on top of the slender column that rises from the center of the *schola* of Aesquillia Polla was of course purely decorative. Spano thought that the urn would be under the back of this *schola* in line with the Ionic column, but when he made a trial excavation at this place he was unable to find it.[36] Quite possibly the urns were buried farther in under the *scholae.*

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[26] The *herba Sabina* is the *Juniperus sabina* of Linnaeus, a decumbent spreading Eurasian juniper with dark foliage and small glaucous berries; it is known in English as the savin or savine.

[27] The *tinus* (the *Viburnum tinus* of Linnaeus) is the English laurustine. It is a European shrub with evergreen leaves and white or pink fragrant flowers.

[28] *Mittheilungen des Kaiserlich Deutschen Archäologischen Instituts, römische Abtheilung* 2 (1887) 206.

[29] A. Maiuri, Pompeii, *Guide-books to the museums and monuments of Italy*, 7th ed. (Rome 1954), p. 89.

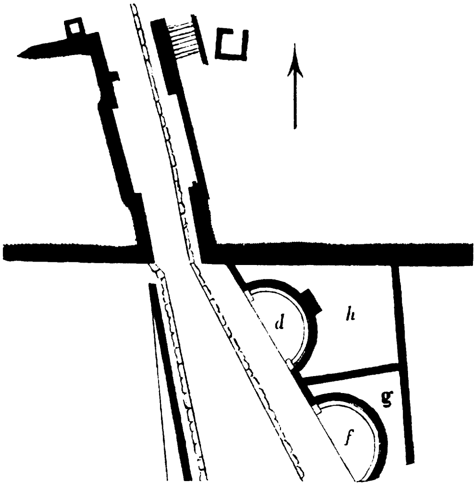

FIG. 5. PLAN OF TOMBS OUTSIDE THE STABIAN GATE (from *Notizie degli scavi* [1891] 274): d. *schola* of M. Tullius, h. tomb garden, f. *schola* of M. Alleius Minius, g. tomb garden.

Dr. Squarciapino, who has made a careful study of the Ostia tombs, believes that the enclosures adjacent to the tombs of M. Tullius and Aesquillia Polla constituted *busta.*[37] According to Festus the place where the body was burned and the ashes buried was called a ***bustum***; but, if the ashes were buried elsewhere, the place where the body was burned was called an

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[30] The excavation of this tomb (in 1908) is reported by G. Spano in *Notizie degli scavi di antichità* (1910) 385–393.

[31] Mau, op. cit., p. 430.

[32] For the *scholae* outside the Stabian Gate see A. Sogliano, *Notizie degli scavi antichità* (1890) 329–330. The *schola* of M. Tullius was excavated in 1889, that of M. Alleius Minius in 1874.

[33] Mau, op. cit., p. 430.

[34] Spano, *Notizie degli scavi di antichità* (1910) 567–568.

[35] E. Pozzi, "Exedra funeraria Pompeiana fuori porta di Nola," *Rendiconti della Accademia di Archeologia, Lettere e Belle Arte* 35 (1969) 185.

[36] Spano, *Notizie degli scavi di antichità* (1910) 393.

[37] M. F. Squarciapino, I. Gismondi, G. Barbieri, H. Bloch, and R. Calza, *Scavi di Ostia,* 3 (1) *Le Necropoli* (Rome 1958), p. 113, n. 16.

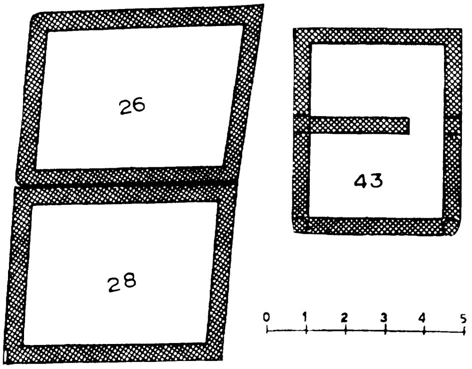

FIG. 6. *BUSTA* AT OSTIA (based on *Scavi di Ostia* 3 [1] *Le Necropoli*).

ustrina.[38] Dr. Squarciapino lists a large number of *busta* and *ustrinae* at Ostia, in accordance with the observations of Calza, who found evidence of burning in many of the enclosures at that site.[39] Perhaps an examination of several tombs at Ostia would be helpful in our study of the tombs at Pompeii. She identifies as *busta* the simple enclosures open to the sky, such as tombs 26 and 28 on the Via Laurentina[40] (fig. 6). She thinks that tomb 43 on the same street, which has a wall partially dividing the interior of the enclosure into two parts may well represent the transition between a simple *bustum* and the tomb with an *ustrina* (fig. 6).[41] Examples of *ustrinae* would be the walled-off areas attached to tomb 20[42] on the Via Ostiense, and to tombs 32[43] and 49[44] on the Via Laurentina (fig. 7). Dr. Squarciapino suggests that the tomb of M. Veius Marcellus—an open, walled enclosure outside the Vesuvius Gate at Pompeii—is perhaps a *bustum* (tomb i. on fig. 13). She also identifies as *busta* the enclosure around the tomb of C. Vestorius Priscus, outside the Vesuvius Gate, and that around the tomb of N. Istacidius Helenus outside the Herculaneum Gate[45] (tomb 21 on the left, fig. 1). Meiggs points out, in his discussion of the Ostia tombs, that "by the Flavian period, and probably earlier, the bodies of the dead were always cremated in public *ustrinae,* a more economic and probably a more efficient system."[46] It is possible that the rectangular enclosure placed at the point where the road divides, some distance from the Herculaneum Gate, was a public *ustrina* (no. 33 on fig. 1).[47]

More recently, Pozzo has maintained that the enclosures adjacent to the tombs of M. Tullius and A. Alleius Minius outside the Stabian Gate were built simply to outline the limits of the property, but that this does not exclude the possibility that the enclosure of M. Tullius might also have served as a *bustum.* He also thinks that the enclosure adjacent to the tomb of Aesquillia Polla might have been a *bustum,* but that it is not closely enough attached to have belonged to this tomb.[48] Further excavation might clarify this. He admits in a footnote that there might be some validity to the suggestion of Spano that the enclosure adjacent to the tomb of Aesquillia Polla was a tomb garden.[49] Spano also

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[38] Festus (Lindsay 29): bustum proprie dicitur locus, in quo mortuus est combustus et sepultus . . . ubi vero combustus quis tantummodo alibi vero est sepultus, is locus ab urendo ustrina vocatur. The *ustrina* is sometimes mentioned in the tomb inscriptions: *CIL* 5.3554, 8308; 6.10237. The neuter form *ustrinum* is found in some inscriptions: *CIL* 6.11576 (Hoc monumentum et ustrinum), 10.6414.

[39] Squarciapono, op. cit., p. 110. Shells and bones of domestic animals, probably the remains of funeral feasts, were also found in the Ostia tomb enclosures.

[40] Ibid.

[41] Op. cit., p. 102.

[42] Op. cit., p. 42–44.

[43] Op cit., p. 118–119.

[44] Op. cit., p. 104.

[45] Op. cit., p. 111–112. See Pozzi (op. cit., p. 186, n. 29), who points out that the tomb enclosure of Vestorius Priscus with its paintings would not have been used as a *bustum.*

[46] Meiggs, op. cit., p. 459.

[47] T. Dyer, *Pompeii, its history, buildings, and antiquities* (London 1868), p. 514–515.

[48] Pozzo, op. cit., p. 185–186.

[49] Ibid., n. 26.

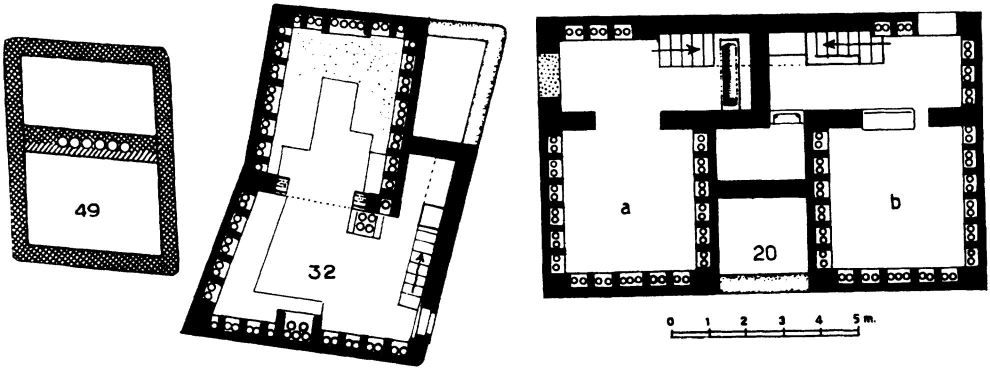

FIG. 7. *USTRINAE* AT OSTIA (based on *Scavi di Ostia* 3 [1] *Le Necropoli*).

identified as a funeral garden the spacious area with a frontage of twenty-four meters around the so-called Unfinished Tomb, on the Street of Tombs outside the Herculaneum Gate (tomb 16, on left, fig. 1). This tomb was an altar raised on a high base, built in the middle of a plot limited by a low wall in the back. Spano was so sure that this area was a garden that he planted it, at the same time that he was planting many gardens in the houses at Pompeii.[50]

The visitor to the more recently excavated necropolis outside the Nuceria Gate discovers that the areas around these tombs have also been planted (fig. 2). Scholars continue to disagree on whether walled enclosures were intended merely to mark the limits of the plot or to be used for *ustrinae*, or were, perhaps, funeral gardens. In the course of my study of the gardens at Pompeii I have examined carefully all the extant archaeological evidence in an effort to locate the tomb gardens. Ideally, one would hope to find evidence of ancient plantings, and thus establish definitely the presence of a garden. At Pompeii, when an area is excavated down to the level of the earth at the time of the eruption, it is possible to discover evidence of the ancient roots if the land was planted. But if the evidence is not examined immediately, it is extremely difficult and usually impossible to recover it at a later date. In a few cases I have been able to do this, in places where an overgrowth of weeds or modern plantings had not destroyed the ancient evidence, notably in the so-called Foro Boario at Pompeii, which I discovered was an ancient vineyard.[51] But it has been impossible to examine the tomb areas at Pompeii because of the modern plantings.

Fortunately, a chance discovery at nearby Scafati throws considerable light on this problem. During excavation for the foundations of a modern building in the area between the Circumvesuviana Railway and the highway an ancient tomb was discovered. No doubt the entire network of roads connecting the towns that were covered by Vesuvius was lined with tombs, which still lie buried under the Campanian countryside. The area at Scafati was declared an archaeological zone under the Superinten-

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[50] Spano, "La tomba dell'edile C. Vestorio Prisco in Pompei," *Atti della Reale Accademia d'Italia. Memorie della classe di scienze morali e storische*, series 7, vol. 3 (Rome 1943), p. 248 and n. 6.

[51] Wilhelmina F. Jashemski, "Excavations in the 'Foro Boario' at Pompeii: a preliminary report," *AJA* 72 (1968) 69 → "The University of Maryland excavations at Pompeii, 1968," *AJA* 74 (1970) 63 f. Prior to this I discovered two less precisely planted vineyards at Pompeii. For reports of these see "A Pompeian vinarius," *CJ* 62 (1967) 193–204 and "The caupona of Euxinus at Pompeii," *Archaeology* 20 (1967) 36–44.

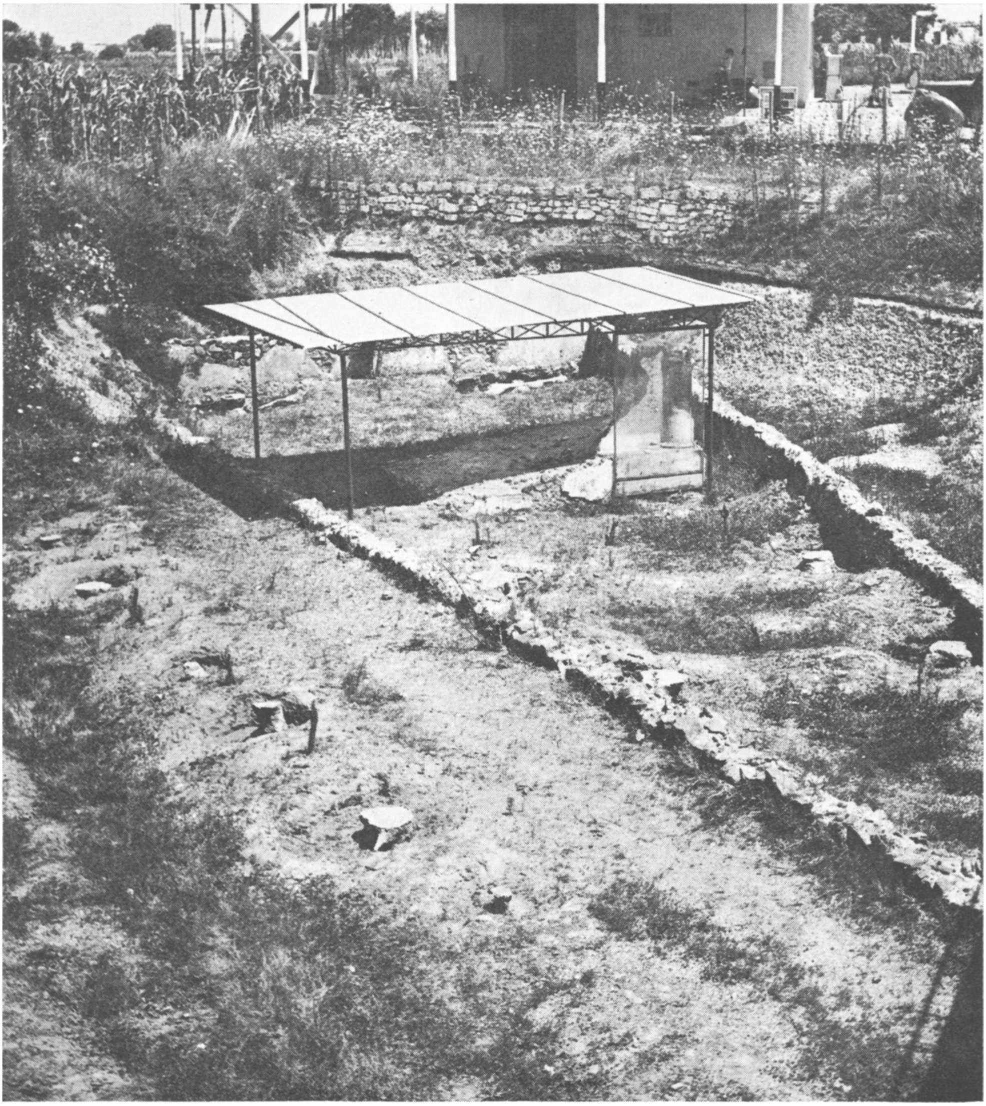

FIG. 8. TOMB GARDEN AT SCAFATI

dent of Antiquities at Salerno, Professor Mario Napoli.[52] The tomb was located in a triangular area enclosed by a low tufa wall. The back wall, which was the highest one (about 95 cm. in height on the average), was eight meters in length. The two longer walls could not be measured in their entirety because they continue under the modern street. This tomb was located, as was customary in antiquity, along a road, probably a small one that branched off from the main road between Pompeii and Nuceria. The wall of the tomb enclosure along the road was very low; the excavated section measures 20.5 meters (fig. 8, 9).

The archaeologists, upon discovering evi-

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[52] *Bolletino d'arte*, series 4 (1964) 368–369.

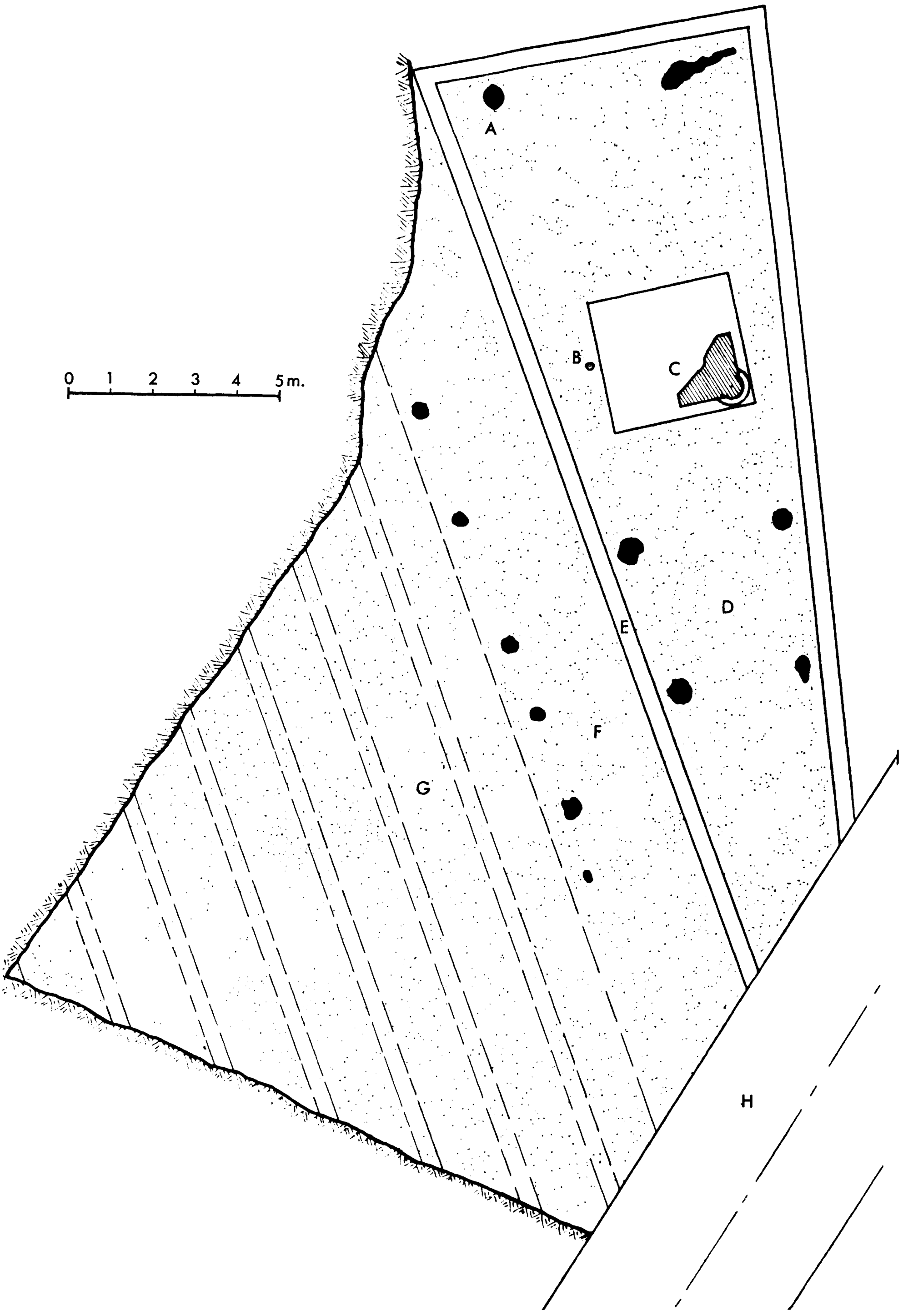

FIG. 9. PLAN OF TOMB GARDEN AT SCAFATI (courtesy of Dr. Bruno d'Agostino): A. tree root cavity, B. cinerary urn, C. remains of tomb monument, D. *ustrina*, E. Wall, F. ancient road, G. furrow.

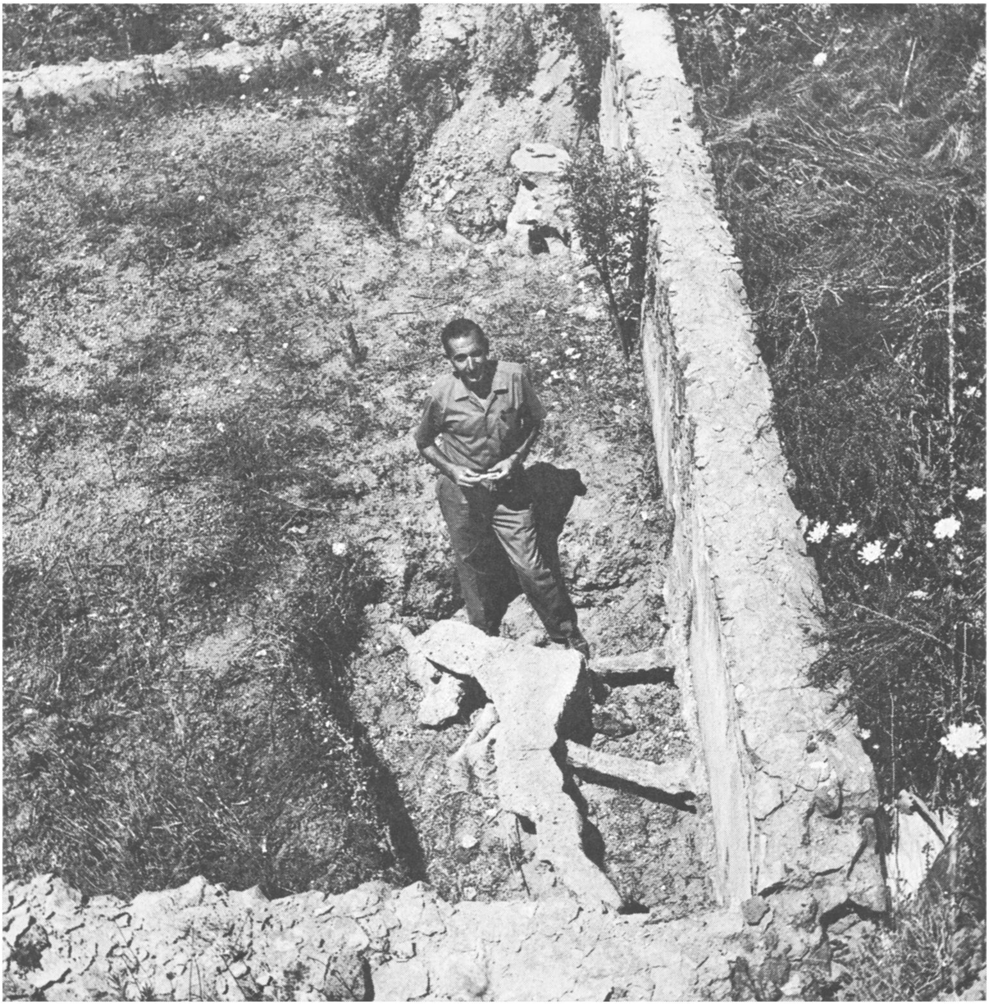

FIG. 10. CEMENT CAST OF LARGE TREE ROOT IN TOMB GARDEN AT SCAFATI.

dence of ancient plantings around the tomb, immediately examined and preserved the evidence. When the ancient roots decayed, lapilli gradually filled the cavities. This fill can be carefully removed, cement poured into the cavity, and a cast made of the ancient root. When the soil is pulled away from the cast, the shape of the ancient root stands revealed. Within the tomb enclosure the cavities of six tree roots were found. Two were in the corners at the rear (fig. 9, 10), and four were planted in front of the tomb. On the opposite side of the road, which was two meters in width, six root cavities were found. Beyond this was a planted area with the ancient furrows still clearly visible (fig. 11). The six root cavities in the tomb enclosure were of varying

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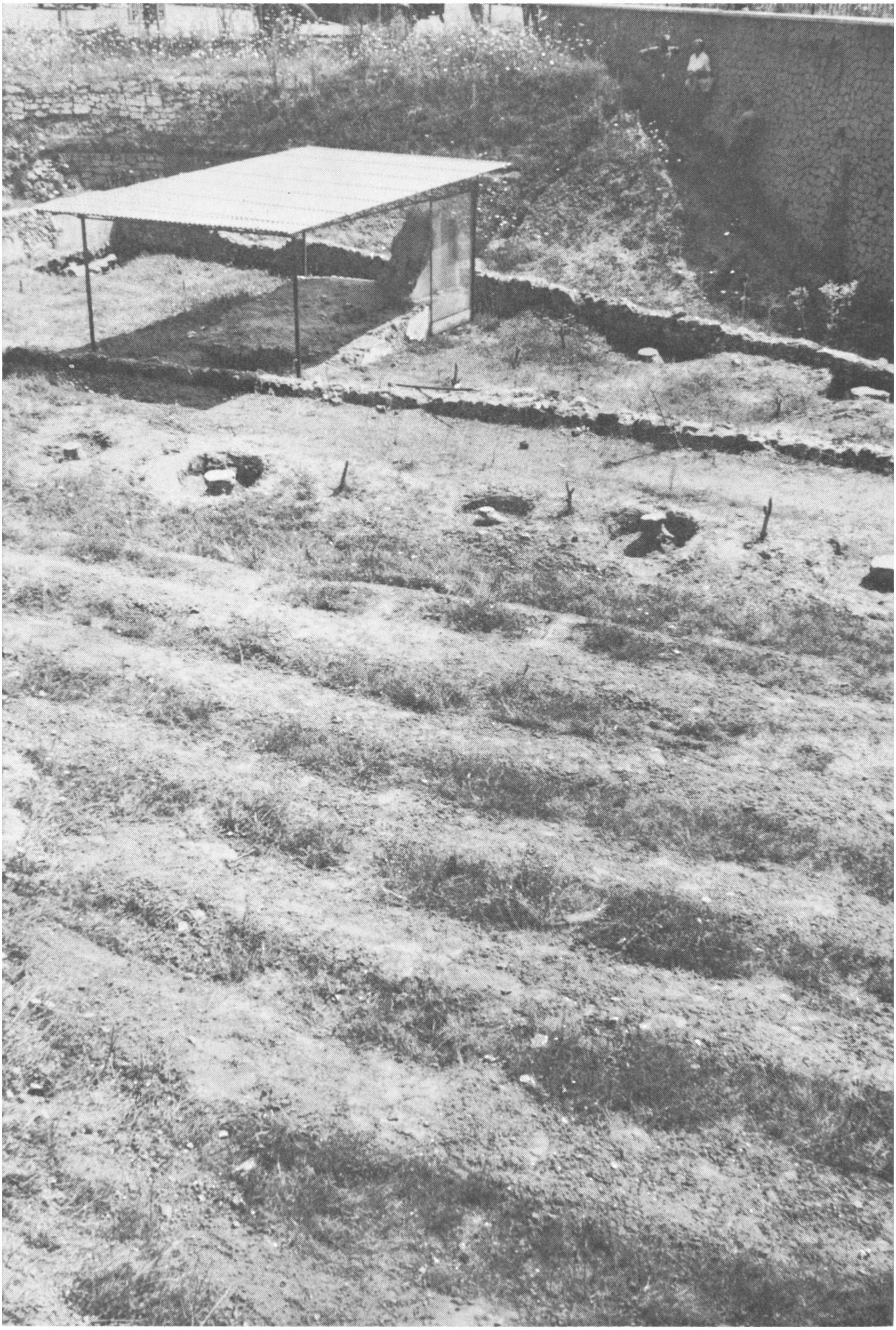
FIG. 11. ANCIENT FURROWS AT SCAFATI.



size, but all were the cavities of tree roots. It is difficult to identify the six large trees that adorned the tomb enclosure, but, because of the popularity of the cypress tree as a tomb planting,[53] we might expect at least some of them to be cypresses. We may safely assume that the area around the tomb was planted with fragrant flowers, even if some of the trees were shade trees. In antiquity, as today, the fertility of the Campanian soil and the brilliance of the sun make it possible to plant under trees.

The area between the four trees in front of the tomb was reserved for other use. In the center of this area was a tumulus of earth about 25 cm. high with a diameter of 50–60 cm. This was surrounded by a shallow elliptical ditch 3.10 meters by 2.10 meters in size. The burned material and bones found in the tumulus, and the strong traces of burning in the ditch indicate that this was the *ustrina*.[54] To the student of tomb gardens this is a very important discovery, for it proves that a walled enclosure might include both a garden and an *ustrina*!

It is difficult to say whether the furrows behind the row of trees on the opposite side of the road were part of a large garden attached to a tomb. But it seems more probable, since there was no wall enclosing it in a tomb plot, that it was simply a planted area along the side of the road. Such narrow country lanes, with garden plots reaching to their edge, can still be seen in the area about Pompeii, but never by tourists, for these roads are scarcely two meters wide, and will not accommodate even small European motor-cars, which find it impossible to pass each other if they chance to meet. I recall driving along such a road during the summer of 1968 when visiting one of our workmen who had recently acquired a car. A neighbor, approaching on his motorcycle, politely turned off into a crossroad some distance away, for the precious land had been planted to the very edge of the road, leaving no space for even a motorcycle to pull aside.

The discovery of the tomb garden at Scafati now makes it possible better to interpret the evidence at Pompeii. It seems certain to me that the low, walled enclosures adjacent to the *scholae* were planted. The Pompeians would not leave plots of bare soil, especially in conspicuous places, near the city gates, attached to *scholae* intended for rest and enjoyment. This of course does not eliminate the possibility that a portion of the plot had been used as an *ustrina*. We can be sure that the area around the impressive tomb with the monumental hemicycle on the Street of Tombs outside the Nuceria Gate was appropriately landscaped. It belonged to the wealthy Pompeian priestess, Eumachia, who built the large building in the Forum for the fullers. But there are modest enclosures in which tombs were located that could easily accommodate both an *ustrina* and a small garden. In my study of the small houses at Pompeii I have found that even the humblest inhabitant tried to make some provision for a garden, even if "no larger than a professor's desk."[55] The desire for a little green and a few flowers appears to have been a basic part of the Roman character. We can not doubt that the Pompeian, to whom gardens and flowers were so important in life, would fail to provide them for his tomb, if at all possible.

Not only were tombs planted with gardens; they were also at times decorated with paintings of gardens. Two such paintings can be seen on the façade of one of the recently excavated (and still unpublished) tombs outside the Nuceria Gate (fig. 12). The two recessed arched panels on each side of the entrance are decorated with garden paintings reminiscent of those found in many Pompeian gardens. Frequently an owner decorated a garden wall with such a

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[53] Ovid, *Tristia* 3.13.21; Horace, *Odes* 2.14.23; Vergil, *Aeneid* 3.64, 6.216.

[54] *Bolletino d'arte*, series 4 (1964) 369.

[55] Wilhelmina F. Jashemski, "The small gardens of Pompeii," *History today* 14 (1964) 234–240.

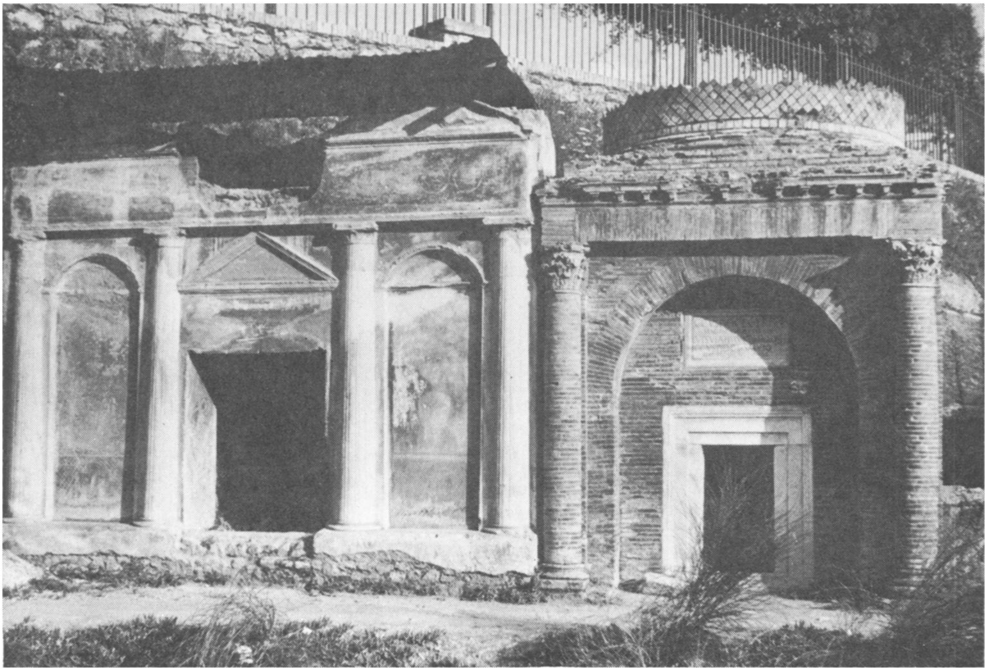

FIG. 12. TOMB WITH GARDEN PAINTINGS ON STREET OF TOMBS OUTSIDE THE NUCERIA GATE.

picture in order to give the illusion of a much larger garden. In paintings of this sort, there is usually a fountain; a low, latticed fence; and, in the background, trees, flowering shrubs (frequently oleanders) and many birds. Thus it was possible to enjoy trees, fountains and statues which were much too large for the actual garden. The paintings on this tomb show water playing in a fountain, and the usual low fence. Close inspection shows birds flying amid flowering shrubs. Only the façade of this tomb has been excavated, so it is difficult to say if there was a garden at the back. Nor has the area to the left of the tomb been cleared. On the right the tomb is hemmed in by another. Since the tomb is directly on the street, one is tempted to conclude that the owner used the same device, so successfully employed in homes, of creating the illusion of a garden by the use of a painting. Whether the garden painting had further symbolic significance is difficult to say.

Another garden painting can be seen in the tomb of the young aedile, C. Vestorius Priscus, just outside the Vesuvius Gate (fig. 13).[56] This young man died in his twenty-second year, and the land for his tomb and 2000 HS for his funeral were given by the city council. His mother Mulvia Prisca, erected the elaborate tomb at her expense. The monument is an altar on a high base, which was enclosed by a high wall (fig. 14). The walls were crudely decorated on the exterior; only the altar rising above them attracted attention. But upon entering the enclosure through the low door at the back, one finds the interior, as well as the altar base, decorated with many unusual paintings. One of these is a (badly

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[56] The excavation of this tomb in 1908 was noted briefly by Spano in *Notizie degli scavi di antichità* (1910) 402–403. He later published it in detail: "La tomba dell'edile C. Vestorio Prisco in Pompei," *Atti della Reale Accademia d'Italia. Memorie della classe di scienze morali e storische*, series 7, vol. 3 (Rome 1943), p. 237–315.

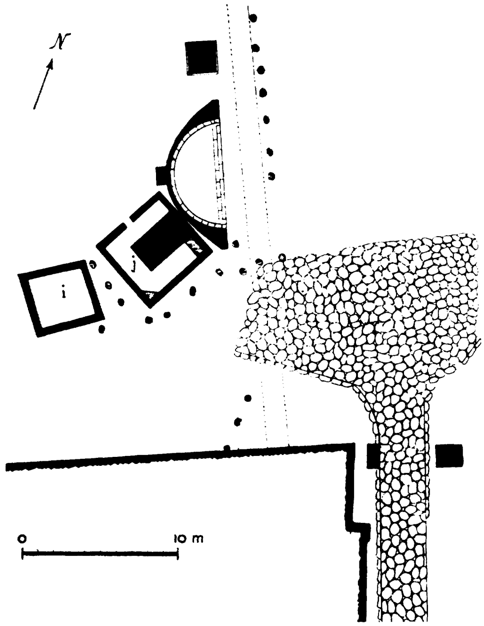

FIG. 13. PLAN OF TOMBS OUTSIDE THE VESUVIUS GATE (from *Notizie degli scavi* [1910] 400): i. tomb of M. Veius Marcellus, j. tomb of C. Vestorius Priscus.

preserved) garden painting. There is the usual low fence, a fountain and, in the background, shrubs. Other paintings picture interests or events in the life of the young magistrate, or events connected with his funeral: the gladiatorial combat, the hunt scene, the young aedile performing his administrative duties, the funeral banquet, and the table of utensils for tomb worship. Others, such as the pomegranate tree laden with ripe fruit, certainly have symbolic significance.[57] The pomegranate had been used as a symbol of death in Italy since Etruscan times. It is difficult to say how many of the others have symbolic meaning.[58] For example, is the garden meant to represent the blissful surroundings of the hereafter, or merely one of the things appreciated by the young man when he was alive?

At death the body was decked with flowers as an expression of honor and affection, and the funeral urn was likewise decorated.[59] Occasionally wreaths of dry or artificial flowers or leaves have been found in tombs. The beautiful *corona* of everlasting flowers in the British Museum was found in a Roman tomb at Hawara, Egypt. At the funeral banquet there would be flowers. They were in general use at all Roman banquets: guests were garlanded with flowers, and flowers were even showered upon them.[60] In the dining rooms of Nero's Golden House, the ceilings were built with ingenious ivory plaques through which blossoms could be scattered down on guests.[61] In his careful study of the painting of the funeral banquet of Vestorius Priscus, which was held outdoors, Spano has noted individual flowers and foliage scattered on the ground. Although the painting was in a bad state of preservation he identified two white Madonna lilies (*Lilium candidum*), and other flowers, yellow in color, which seemed to be crocuses. Both flowers were favorites of the Romans. The painting shows the scattering of flowers or foliage (*spargere flores, frondes*) upon the guests, at the funeral banquet.[62]

The desire for continued floral offerings at one's tomb was so strong that individuals even set up endowments to provide roses for their sepulchres.[63] Just as fresh flowers were brought regularly to decorate the tombs, so too might sculptured garlands

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[57] Spano, op. cit., p. 254, suggests that the pomegranate would also be found among the plantings in tomb gardens.

[58] See M.J.M. Dentzer, "La tombe de C. Vestorius dans la tradition de la peinture italique," *Mélanges de l'École française de Rome* 74 (1942) 533–594, for a discussion of the possible symbolic meaning of these paintings.

[59] See E. Egger and E. Fournier, s.v. *corona* in *D-S*; Pliny, *N.h.* 21.10–11.

[60] Horace, *Odes* 3.19.22, 1.36.15; *Epistles* 1.5.14; Martial 9.93.5; Ovid, *Fasti* 5.336.

[61] Suetonius, *Nero* 31.

[62] Spano, "La tomba dell'edile C. Vestorio Prisco in Pompei," op. cit., p. 279, 284–285. In this connection it is interesting to recall that Anchises calls for lilies and purple blossoms to scatter on the shade of Marcellus (Vergil, *Aeneid* 6.883–884).

[63] *CIL* 5.2176, 4990.

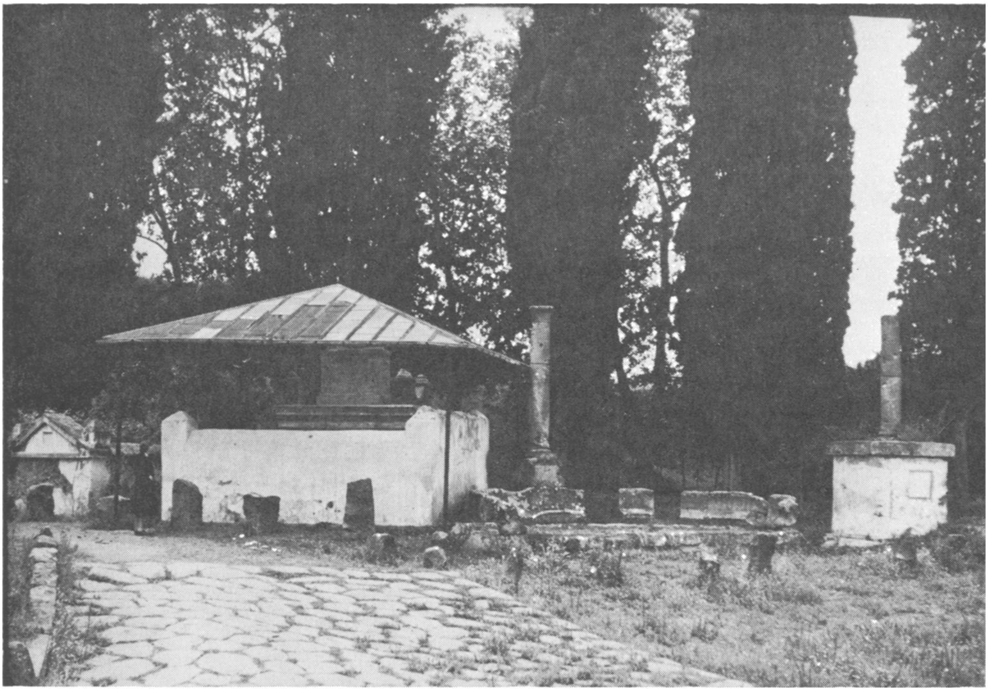

FIG. 14. TOMBS OUTSIDE THE VESUVIUS GATE: extreme left, tomb of M. Veius Marcellus; second from extreme left, tomb of C. Vestorius Priscus, protected by modern roof.

add permanent decoration. The Tomb of Garlands, just outside the Herculaneum Gate (fig. 1) was noteworthy at the time of excavation because of the beautiful stucco garlands that hung between the engaged columns on its exterior,[64] but these have long since disappeared.

The ancient traveler, leaving Pompeii by way of the Herculaneum Gate, in the last days of the city, after passing the Tomb of Garlands, probably gave more than a second glance to the unusual tomb newly built just a few steps farther down the street. It took the form of a semicircular bench in a roofed niche, and provided a shady resting place for travelers on this busy street. The marble tablet, still blank, told the passerby that the owner was still alive. Both this tomb, and the adjacent one (tombs 8 and 9 on fig. 15), seem to have belonged to the adjoining villa (12 on fig. 15). The plot of ground behind the tombs could be entered directly from the garden of the villa. Another entrance led through a long passageway from the garden to the Street of Tombs (fig. 15). This garden is one of the most interesting and luxurious at Pompeii. The similarity between the decoration of the niche tomb and that of the villa garden, along with the close communication between the garden and the tombs, has led some scholars to believe that this was a tomb garden.[65] In the center of the garden, and offering a charming view from the Street of Tombs, was a shallow impluvium-shaped pool, with a jet fountain (c. on fig. 15); at the four corners were the brightly colored mosaic columns (now in the National Museum at Naples) which

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[64] Fiorelli, op. cit., p. 414.

[65] Mau, op. cit., p. 417; A. Maiuri, *Pompeii* (Novara 1956), p. 152.

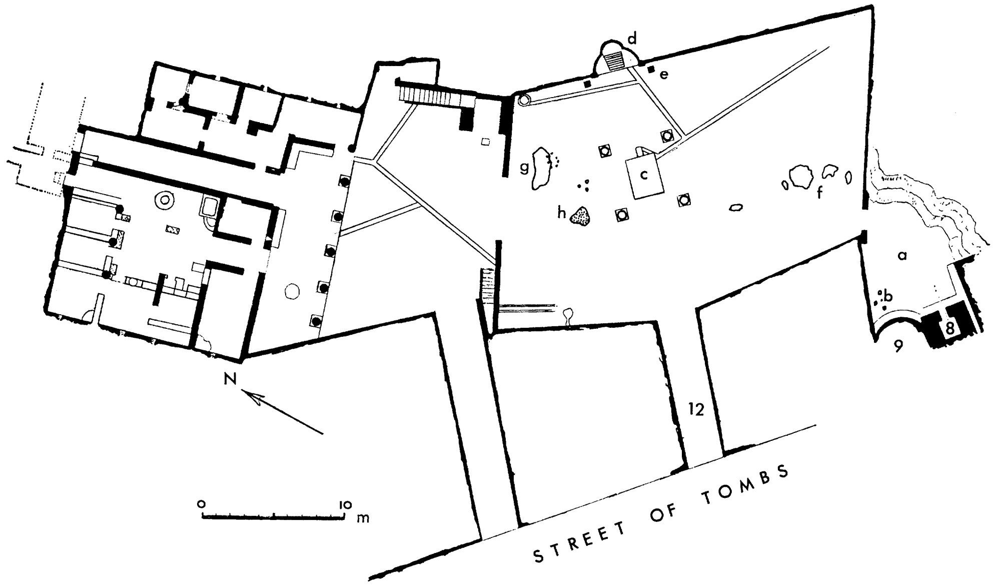

FIG. 15. PLAN OF THE VILLA OF THE MOSAIC COLUMNS AND ADJOINING TOMBS (from *Notizie degli Scavi* [1910] 254): 8. tomb, 9. sepulchral niche, 12. Villa of the Mosaic Columns, a. tomb plot, b. tree, c. pool, d. apse with fountain and water-steps, e. low columns with statues, f. trees, g. and h. flower beds.

once supported a pergola. Behind, in an apsed recess on the rear wall, was an elaborate mosaic fountain, with water steps, and a shell-shaped roof. On one side on a low column was a marble statue of a boy and a hare, on the other side a glazed terracotta frog on a low column. Mau felt that the garden had a "distinctly sepulchral character" and would have been an ideal place for the funeral feast. Spano thought that the tomb garden was only the plot behind the two tombs (a., still only partially excavated, on fig. 15). He found evidence of a tree root here (b. on fig. 15), as well as evidence of informal plantings in the villa garden; there were several large trees in the south part (f. on fig. 15) and to the north two little flower-beds (g. and h. on fig. 15).[66] The evidence is not conclusive; but, if this was a tomb garden, Pompeii offers a good example of the elaborately decorated tomb gardens so well known from inscriptions. If it was a garden of the liv-

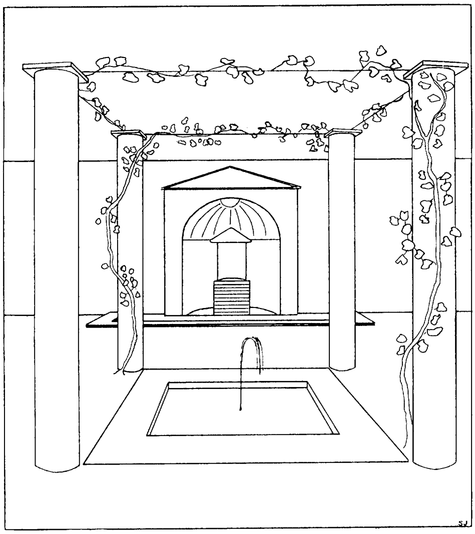

FIG. 16. GARDEN OF THE VILLA OF THE MOSAIC COLUMNS.

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[66] Spano, *Notizie degli scavi di antichità* (1910) 253–256. This garden was first excavated in 1837 (Fiorelli, op. cit., p. 415). Many years later when Spano carefully examined the subsoil he found the impluvium-shaped pool and jet fountain between the four mosaic columns.

ing, its close proximity to the villa tombs, and to the Street of Tombs, illustrates vividly the way in which the departed continued to share in the activies of the living.

As I work at Pompeii, I am constantly impressed with the continuity of life in the shadow of Vesuvius. Frequently it has been our workmen who have explained something that has puzzled the scholars. And how do they know? Because Pompeians have always done it that way. This was brought to my attention again in connection with my study of the tomb gardens. When we return to Pompeii, visits to the graves of friends who have died since our last trip are a natural thing. The modern cemetery is alongside a busy road, not stretched out on both sides of the road; but it is adorned with the same cypresses and oleanders that landscape the ancient tombs. Tombs of prominent Pompeians of modern times resemble those in the ancient cemeteries. In fact, the tomb of an ancient Pompeian, uncovered, and carefully preserved, in the course of building the new cemetery, does not look out of place among the more recent tombs. Instead of lamps, which have been found in abundance in the ancient tombs, tiny electric lamps, maintained for a small fee paid by the family, provide a "perpetual flame" on each tomb. In antiquity sculptured busts or statues of the deceased were frequently a part of the tomb memorial. It seems quite appropriate to find the likeness of the beloved Pompeian scholar, Matteo della Corte, "the most Pompeian of them all" sculptured on his tomb. Many modern tombs have photographs of the deceased. But the thing that impresses the visitor from America is that, no matter when one visits the cemetery, each tomb is decorated with a fresh bouquet of flowers! This means that in the hot Campanian sun fresh bouquets must be brought several times a week. But, as in antiquity, the modern Pompeian visits the tombs of his dead very often. When I asked one of our workmen, who had taken us to see the graves of members of his family whom we had known, how often he visited them, he answered: at least once a week, but someone in the family went every two or three days. Departed Pompeians continue to share in the activities of the living, and flowers and gardens adorn the tombs just as they have always done.

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The Discovery of a Large Vineyard at Pompeii: University of Maryland Excavations, 1970*

WILHELMINA F. JASHEMSKI

PLATES 3-4

The 1970 season of the University of Maryland at Pompeii marked the third and final summer devoted to the excavation of the large *insula* (Region II, *Insula* v) N of the amphitheater.[1] Limited subsoil excavations during 1966 indicated that the area was a vineyard, and not the *Foro Boario*, or Cattle Market, as had been believed for many years.[2] Excavations during the summer of 1968 (ill. 1) further clarified the planting pattern, uncovered two triclinia in the vineyard, and revealed the presence of numerous trees.[3] The lapilli which had gradually filled the cavities when the ancient roots decayed were carefully removed, the cavities measured, and plaster casts made.[4] But the areas excavated in 1966 and 1968 had been too badly damaged by the passage of trucks and by modern vegetation to permit a definitive study of the nature of the cavities found, and many questions regarding viticulture as revealed in this important vineyard could not be answered. Most of the *insula* had been cleared during the 1950's, with the exception of the NE quadrant occupied by a large modern house, and a part of the NW corner, where there appeared to be an ancient building (ill. 1).[5] At this time the excavators removed the volcanic material down to the original ground level in most areas, and later covered the area with backfill of varying depths. In the course of excavation the upper parts of the root cavities were frequently destroyed.

The uniqueness and importance of this vineyard, which occupied such a valuable piece of land inside the city walls, made it desirable to excavate part of the vineyard still covered by the original volcanic fill. Only by examining the undisturbed cavities could we hope to find the answers to our questions.

THE COMPLETION OF THE PLANTING PATTERN OF THE VINEYARD: IDENTIFICATION OF VINE ROOT AND STAKE CAVITIES

The objective in 1970 was to complete the study of the planting pattern of the vineyard, and to excavate a portion of the vineyard still covered by the original fill. With the generous assistance of Professor de Franciscis and the Ministry at Rome a portion of the hill of original volcanic debris and accumulated soil (c. 6 m. in height) was removed down to a meter of lapilli before our arrival. We were thus able to begin excavating a virgin area undamaged by previous work.

We first excavated the area E of the N-S path, where the W side of the hill had been removed. We had previously uncovered the path as far as the hill.[6] We now continued our excavations in the

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* An earlier draft of this paper was given at the Seventy-second General Meeting of the Archaeological Institute of America at New York on December 30, 1970. Funds for the excavations were provided by the General Research Board of the University of Maryland. All photographs (except pl. 3, fig. 6 by the U.S. Department of Agriculture), illustrations, and statistical studies are by Stanley A. Jashemski.

[1] Work at Pompeii, from July 10 to August 11, 1970, was again greatly facilitated by the generous cooperation and gracious hospitality of Professor Alfonso de Franciscis, Superintendent of Antiquities in Campania, who generously made available the facilities at Pompeii. Mr. Nicola Sicignano was again our able foreman, assisted by Mr. Andrea Sicignano. Gratitude is also expressed to Dr. John R. McGrew, Research Plant Pathologist and Viticulture Specialist, United States Department of Agriculture, Plant Science Research Division, Beltsville, for invaluable counsel regarding the technical aspects of viticulture; to Dr. Frederick G. Meyer, Research Botanist in charge of the United States National Arboretum Herbarium for his generous help in identifying carbonized specimens and comparing them with contemporary plant specimens; and to Dr. Henry Setzer, Mammalogist in charge of the African Section at the Smithsonian Institution, through whose kindness the bones found in our excavations were examined and identified.

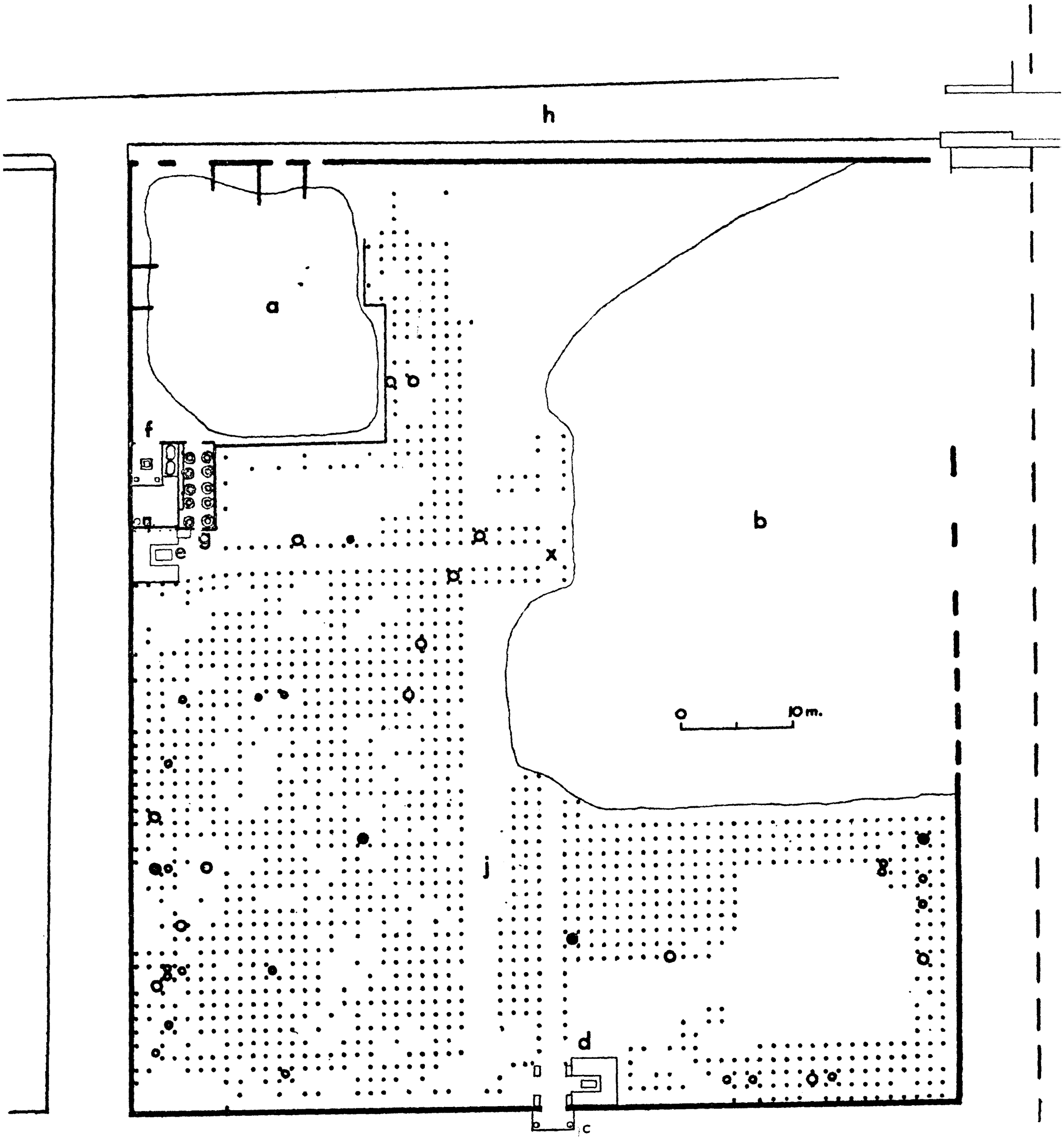
[2] For a report of the 1966 excavations → "Excavations in the 'Foro Boario' at Pompeii; a Preliminary Report," *AJA* 72 (1968) 69-73, pls. 33-34.

[3] For a report of the 1968 excavations → "University of Maryland Excavations at Pompeii, 1968," *AJA* 74 (1970) 63-70, pls. 17-18.

[4] See *AJA* 72 (1968) 70, 72 for the technique used in making casts of ancient roots.

[5] For the excavation of the most important features in the vineyard see Carlo Giordano, *Giornale di scavo sistematico eseguito nell'area del Foro Boario da 1 Decembre, 1954 al 31 Maggio 1955* (unpublished).

[6] *AJA* 74 (1970) 66 and pl. 18, fig. 10.



Ill. 1. Region II, *insula* v in 1968. a,b) unexcavated areas; c) s entrance; d,e) masonry triclinia; f) room with wine press; g) shed with ten dolia embedded in ground; h) Via dell'Abbondanza; i) Sarno Gate; j) area left for passage of trucks; x) intersection of paths. Dots indicate grapevine roots; small circles, small tree roots 10 cm. or less in longest diameter; large circles, medium tree roots; large black circles, large tree roots 30 cm. or more in longest diameter

undisturbed area working toward the N wall. When the lapilli were removed, we found that the same precise planting pattern continued, the distance between the vines being almost exactly four Roman feet. But it was now possible for the first time to study the contour of the surface of the vineyard as it had been at the time of the eruption. Around the vine root cavities we found the three or four depressions for water that we have previously reported,[7] but in this area the depressions were much deeper and more pronounced. It was now possible to see how much of the original contour had been

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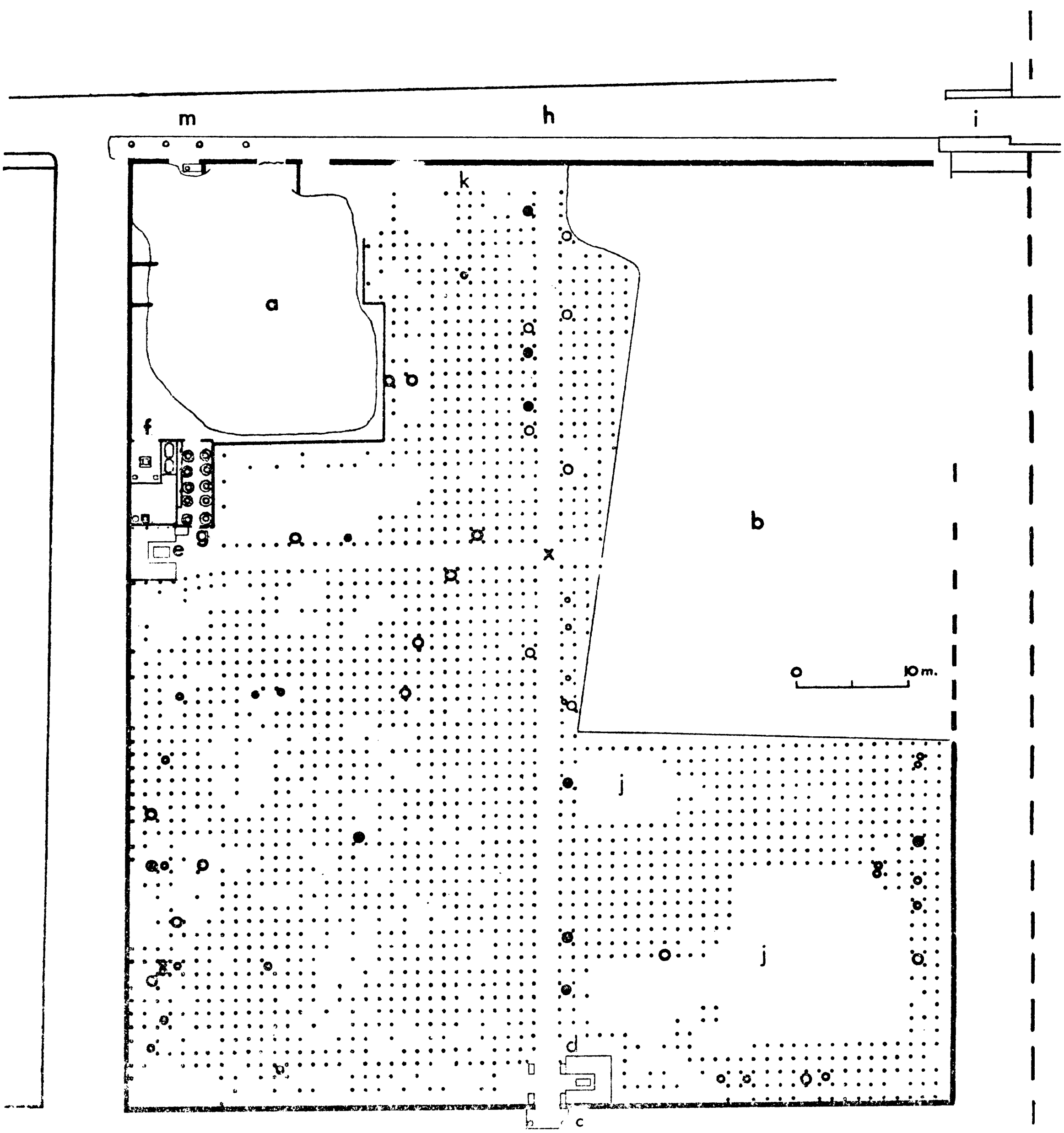
[7] *AJA* 72 (1968) 73 and pl. 34, figs. 6-7.



Ill. 2. Vineyard at end of 1970 season. a,b) unexcavated areas; c) s entrance; d,e) masonry triclinia; f) room with wine press; g) shed with ten dolia embedded in ground; h) Via dell'Abbondanza; i) Sarno Gate; j) unexcavated backfill from 1954-55 excavations; k) path along n wall; m) wineshop and portico; x) intersection of paths. Dots and circles as in ill. 1

sliced off during the previous excavations, or destroyed by the weight of passing trucks. As our trench was widened to include the path, it was found to have a definite depression down the center.[8] We continued excavation in the undamaged area toward the n, soon arriving at the place where the e-w path crossed the n-s one (ill. 2). We then continued for some distance toward the n wall.

For the first time we could examine cavities in an undamaged area. The areas excavated earlier had been too disturbed to be sure if there were originally two cavities at each location, and if the second cavity often found was that of a stake or of another root. The total number of vine roots given in previous reports counted only one root in each location, pending identification of the second cavity. The local growers, who were much interested in the discovery of an ancient vineyard, unanimously insisted that the vines had been staked in antiquity, just as they stake them today. They were sure that the Pompeians had always done it that way. The fruit experts at the University of Naples, on the other hand, believed that the second cavity found in many locations was that of another root, and that the vines had been pruned low, and left unstaked, as is done in Sicily today.

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[8] Discussed below in section on Soil, Topography and Drainage.

With great excitement we began to empty the cavities. We found them perfectly preserved, and it was obvious that, with few exceptions, one was always clearly that of a vine root, easily identified by its shape and small lateral roots. The second cavity was always that of a stake (pl. 3, fig. 1). After the cavities were cleaned, measured and studied, they were filled with cement and casts made. After three days when the surrounding soil was pulled away, at almost every location the cast of a stake and a root was revealed (pl. 3, fig. 2). The local vine growers were not surprised.

We then excavated the undamaged area under the portion of the s part of the hill of original volcanic debris that had been removed for us. We began at the E wall and worked toward the w. Here too we found the original contour of the vineyard as it was at the time of the eruption, with the same deep depressions for water, and perfectly preserved cavities, which were also emptied, measured, studied, and casts poured.

Frequency distribution charts were made of the measurements of the depths and cross-sections of the stake and root cavities as well as of the cavities of the large posts along the paths in these two undisturbed areas. (The post cavities will be discussed below in the section on footpaths.) The results showed: 1) Almost all of the stake cavities were 8-23 cm. in depth with a median depth of 15 cm. 2) 90 percent of the root cavities were 7-28 cm. in depth with a median depth of 16 cm. The range was 7-55 cm. 3) Almost all of the stake cavities had a diameter of 2.5-5.5 cm. with a median diameter of 4 cm. The smallest stake was 2 x 3 cm., the largest 7½ x 8. 4) 90 percent of the root cavities had a diameter of 2-5.5 cm. with a median diameter of almost 4 cm. The smallest was 1 x 1 cm., the largest 8½ x 8½.

This survey shows that the well-preserved stake and root cavities did not differ significantly in depth or in cross-section, but that there was a wider range in the diameter of the root cavities. Dr. John R. McGrew suggested to me that the very small root cavities were probably those of cuttings that had been set out the previous year to replace dead vines. The eruption on August 24 came too early for cuttings, which were set out after the vintage, to have been planted in 79. The few locations with perfectly preserved stake cavity and no root cavity probably indicated that the vine had died and the new cutting had not yet been planted. In a few places there was no stake cavity, but a definite depression marked the spot where a temporary prop had been placed pending replacement by a permanent stake. It is interesting to note that the few very large root cavities found were along the paths where the vines were trained to grow higher, and thus got more sun.

Our trench was eventually widened toward the w to reach the last row excavated in 1968, and continued to the N wall on the w side of the N-s path. It was not possible to continue the excavations on the E side of the N-s path all the way to the wall, because of the roadway that entered the *insula* from the Via dell'Abbondanza (ill. 2:h) through a break in the wall, and led to the modern house on the top of the hill. The area w of the path was extremely difficult to excavate; the original level was in many places scarcely below the surface, and badly damaged. The root cavities were badly compacted and sometimes completely destroyed. The work was tedious and slow, but we were able to recover the same planting pattern, as well as a number of tree root cavities. Only then did we excavate the area that had been left for a passageway for our truck (ill. 1:j). Here the work was the most difficult yet and extremely slow. It was of course impossible to distinguish between root and stake cavities, but the same precise planting pattern was found.

It now seemed obvious that the entire area had been planted as a vineyard. Time was running short, and we had not yet removed the backfill in certain areas E of the path in the SE quadrant (ill. 2:j). The backfill was up to two m. in height, and we had neither time nor money to remove so much soil. But to make certain that the entire area was planted we continued our excavation for a width of three rows E of the path, and also uncovered the first row of root cavities N of the triclinium, and discovered that the entire area was enclosed with rows of root cavities (ill. 2).

During the summer 578 vine root cavities were found. These, together with the over 200 reported for 1966 and the over 1200 for 1968, bring the total number of vine root cavities found in the vineyard to 2001 (ill. 2).

THE FOOTPATHS

The major part of the N-S path was cleared during 1970. This path, discovered in 1966,[9] and further excavated in 1968 (ill. 1), led directly from the entrance in the S wall (pl. 4, fig. 3). It continued as we had suspected to the N wall, dividing the *insula* into two equal parts (pl. 4, fig. 4; ill. 2). The E-W path[10] was uncovered for a short distance toward the E. This portion of it and the adjacent portion of the N-S path approaching the intersection had not been previously uncovered (ill. 1), and here we found perfectly preserved roots and post holes on each side of the paths. The posts along the paths were considerably larger than the stakes in the vineyard, and they were set much deeper in the ground. The depth of the post cavities was 32-55 cm., with a median depth of 42 cm. It was not unusual to find two root cavities at each location along the path. This happened only rarely elsewhere in the vineyard. The largest posts (14-32 cm. diam.) had been cut to form quarter-round posts, smaller ones (9-17 cm. diam.) to form half-rounds, and the smallest (7-10 cm. diam.) were used whole. Near several of the post holes nails (c. 10 cm. long) were found, probably used to fasten the frames of the arbored passageway which was similar to those found in the vineyards near Pompeii today.[11]

As we continued our excavations toward the N wall of the *insula* we were unable to find any root cavities closer than three meters to the wall. In 1968 a row of vine root cavities had been found adjacent to the W and S walls; on the E the first row of vines had been planted four Roman feet from the wall (ill. 2). Although the soil was badly disturbed adjacent to the N wall, and in some places cut below the original level, an examination of the last row of root cavities suggested that we had found a third footpath which ran parallel to the N wall (ill. 2:k). Two of the cavities were large circular ones 8 and 12 cm. in diameter, much larger than the usual cavities of vine roots; in size and appearance they appeared to be the cavities of round post holes, similar to those of the smaller posts that had been used whole along the paths.

Such a path would have been convenient for the vintner or his laborers working in the vineyard, or gathering fruit.[12] It is quite possible that there was an entrance to the path from the building belonging to the vintner, but the wall of this building is too destroyed today to preserve any evidence.

It was unfortunately impossible to continue the excavation along the N wall E of the N-S path, without destroying the road on the slope of the hill which led to the modern house. We did however examine the outside of the E half of the N wall which faced on the Via dell'Abbondanza. It was completely overgrown by a thick and almost impenetrable maze of brambles and young trees. When these were cleared away an entrance on the E end of the wall was revealed. This may have been the entrance to a guard room[13] at an earlier period when the walls served as a means of defense, and it is possible that later it gave access to the *insula* and to the path which seems to have continued all along the N wall. But this only excavation could ascertain.

The discovery of a path along the N wall makes more easily understandable the two groups of coins (eleven in one group, four in the other) found there in 1968.[14] They were probably lost by someone walking along the path. The only other coins found in the vineyard were a single coin found in 1968 at the edge of one of the post holes on the E-W path leading to the triclinium outside the vinaria, and one found in 1970 on the N-S path near a post hole. Both had probably rolled to the edge of the path when dropped. The coin found in 1970 was a bronze ass too badly corroded to identify. The obverse was totally destroyed; after careful cleaning only the letters AEQV could be made out on the reverse. A loom weight found in 1970 about a half meter from the N wall may likewise have been dropped. The small finds in the vineyard were negligible except for those found on the paths.[15]

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[9] *AJA* 72 (1968) 72 and pl. 34, fig. 4.

[10] For the excavation of the W half and a small portion of the E part of the E-W path see *AJA* 74 (1970) 65-66 and pl. 17, fig. 6; pl. 18, fig. 10.

[11] *AJA* 74 (1970) 65, pl. 18, fig. 9.

[12] Columella, *De re rustica* 4.18 (hereafter Columella).

[13] A. Maiuri, *Pompeii* ("Guide-books to the Museums and Monuments of Italy": 14th ed. Rome 1970) 86.

[14] *AJA* 74 (1970) 69.

TREE ROOT CAVITIES

Nineteen tree root cavities were found in 1970, bringing the total found to fifty-seven. The cavities were emptied, measured, and cement casts made, the large cavities first being reinforced with heavy wire. The cavities varied greatly in size, the longest dimension at ground level ranging from 3½ to 40 cm. The usual location of a tree was in the center of the space between four vines: seventeen of the nineteen trees found in 1970 had been so planted. Two small cavities found near larger ones were undoubtedly volunteer seedlings such as we had seen in modern vineyards, and had identified in our vineyard in 1968.[16]

We had previously found that the ancient proprietor tended to plant rows of trees around the edges of the vineyard, usually between the second and third rows from the wall, with a few trees placed at random throughout the interior. The 1970 excavations showed that he had also planted rows of widely-spaced trees between the first and second rows of vines on each side of the path. Sixteen of the trees found in 1970 were between the first and second rows on each side of the N-S path (ill. 2).

The number and distribution of trees in our vineyard is more generous than that recommended by Columella,[17] who says that the fig, pear, or apple tree may be planted only at the end of vine rows on the N, "so that they may not shade it." But in the Pompeii area both in antiquity, as our excavations have shown,[18] and today, trees are planted generously throughout a vineyard. In one modern vineyard that was much like ours, even to the arbored pathway, there were thirteen different species of trees. In addition to the willow and the poplar used for tying the vines, there were the Persian walnut and the filbert or hazelnut; the fruit trees included the pear, fig and apple recommended by Columella, also the plum, peach, sour cherry, apricot, sorb and loquat.[19] All these trees except the loquat, which is a modern introduction from Japan, were known to the first-century Romans, and could have been raised by the ancient Pompeians.

The root cavities varied greatly in shape. Some had tap roots; others did not. It is hoped that a study of the casts of these roots may throw some light on the identification of the trees.[20]

PLANT MATERIAL

It was not at all unusual to find small amounts of carbonized roots in the root cavities. In a few places bits of dry roots or only slightly burned roots were found. In 1970, near the E wall in the undisturbed area where the upper part of the hill had been removed, we found traces of carbonized material as we approached the level of the ancient vineyard. The lapilli were then removed carefully by hand, and two oval objects were found at almost ground level. After being photographed in situ (pl. 3, fig. 5) they were gently removed for further study. One disintegrated almost immediately upon being exposed to the air. The other was examined by Dr. Frederick G. Meyer, of the United States National Arboretum. Under the microscope it appeared to be an olive, the flesh of the fruit in part still visible on the seed, the striations quite marked, and the characteristic peduncle and collar still on the fruit (pl. 3, fig. 6). When the lapilli which surrounded the olives were removed, we were not surprised to find a tree root cavity in the center of the area between the four vine roots where the fruit was found. We had predicted that the widely-spaced row of trees between the second and third rows of vine roots from the E wall would continue, and we had hoped that by good fortune some carbonized fruit or nuts might be found. It was in this row that the olives were found as we continued our excavation to the N in the area where the hill of original volcanic fill had been removed. The chance of finding such plant material is of course extremely slight.

The identification of the fruit as an olive was somewhat unexpected, for it was not one of the trees that we had seen growing in modern vineyards near Pompeii. It is frequently found today, however, in Italian vineyards, and we know that this was true in antiquity, for Pliny[21] says that the olive is one of the trees to which the vine might be wedded.

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[15] Two small fragments of Arretine ware, a very small fragment of a pottery lamp, and a few small fragments of amphorae were found in the backfill. It would be interesting to know what potsherds were removed when the fill in the vicinity of the two triclinia was trucked away.

[16] *AJA* 74 (1970) 66.

[17] *De re rustica* 3.21.11.

[18] Trees were also found in the informally planted vineyard in the garden of the *copo* Euxinus a I. xi. 10 which I excavated in 1964. See W. Jashemski, "The *Caupona* of Euxinus at Pompeii," *Archaeology* 20 (1967) 36-44.

[19] *AJA* 74 (1970) 66-67.

[20] The final description of this vineyard will appear in my book, *The Gardens of Pompeii, Herculaneum, and Stabiae.*

It is perhaps possible that in our vineyard vegetables were raised between the vines. The carbonized bean which we found amid the lapilli at the ground level may indicate such land use. I have found no references in the ancient authors to vegetables being planted between the vines, but Varro[22] does say that in young orchards some plant garden or other crops.[23] Intercultivation is common in the Pompeii area today. I remember my great surprise when I first saw vines growing beneath the shade of trees, and, under the vines, corn, tomatoes, beans and other vegetables were thriving. So fertile is the soil, so strong is the sun of Campania.

METHOD OF VINE TRAINING USED IN THE VINEYARD

Now that we are certain that the vines were staked the question of how they were trained[24] remains to be answered. The ancient agricultural writers describe various methods commonly used. Vines can be divided into two general categories: those with no support, and those that are supported. The most complete list is found in Pliny,[25] who gives five methods of training vines, but later in the same book he discusses a sixth, the *arbustum*, in which vines are "wedded" to trees.

1. *Vines with branches spread out on the ground*[26] (ill. 3:1). This type of training produced a large amount of wine, but of poor quality.[27] Moreover, the fruit was threatened by foxes and mice.[28] The method was not favored in Italy, and was recommended by Columella only for those places in which the weather admitted no other type of training.[29] Even so the method prevailed in Africa, Egypt, Syria, the whole of Asia,[30] as well as in many parts of Europe, including parts of Narbonese Gaul.[31]

2. *Vines standing alone without a prop*. According to Pliny[32] this method was used only in places where there was a shortage of props, but he does note that it was used in some of the provinces.[33] Columella, however, in his discussion of provincial vineyards, said that this was the most highly approved of the types of vine training that he knew.[34] The lower branches of the vine were removed, giving the vine the appearance of a small tree standing by itself (ill. 3:2). Such vines could be pruned either to grow to a head (*vitis capitata*), or shaped to grow out in arms (*vitis bracchiata*).[35] Of course vines trained in this way were given some support while young.[36]

3. *Vines propped with stakes without a cross-bar* (*vitis pedata*)[37] (ill. 3:3).

4. *Vines propped with stakes with a cross-bar* (*vitis iugata or vitis canteriata*). This type of training takes its name from the cross-bar or yoke (*iugum*) of the stake. According to Pliny, "a vineyard with the single cross-bar is arranged in a straight row which is called a *canterius*" (or horse). The cross-bar could be made of a stake (*pertica*), a

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[21] *N.H.* 17.200.

[22] *De re rustica* 1.23.6. Cato (*De agri cultura* 33.3) suggests planting clover and Columella (2.10.1; 11.2.60) suggests lupines as fertilizer for worn-out vineyards, but this would not be needed in the fertile volcanic soil of Campania.

[23] K. D. White, *Roman Farming* (Cornell University Press, Ithaca, N.Y. 1970) 48, in discussing the Italian practice of planting grain in orchards, points out that intercultivation also reduced the growth of weeds, the principal enemy of the farmer.

[24] Viticulturists distinguish between the training and the pruning of the vine: "Training refers to the shaping of the vine, attachment to supports, and directing growth of the vine so its height and spread is limited; it is usually performed on young vines. Pruning is largely a dormant season practice and consists of the annual removal of 85-95% of the previous year's growth of wood (canes). It determines the amount and distribution of the fruit and can greatly influence quality. One can say that pruning determines the number and position of the buds that develop, while training determines the form and direction of the trunk and arms" (R. J. Weaver and A. N. Kasimatis, "Patterns in Training and Pruning the Vine around the World," *Wines and Vines* 47 [November 1966] 37).

[25] *N.H.* 17.164-166. Varro, *De re rustica* 1.8.1-2, also gives a list. Columella, 5.4, lists four kinds of provincial vines including a type called *characata* "which are fastened round canes fixed in the ground and are bent into curves and circles, their firm-wood branches being tied by means of props formed of reeds." This type is mentioned again in Columella, 5.5.16. He gives another list in *De arboribus* 4.1.

[26] Pliny, *N.H.* 17.164. When vines were trained in this way the stump was cut close to the ground and left with three buds if the land was fertile, two if the soil was thinner (*N.H.* 17.186).

[27] Columella, *De arboribus* 4.2.

[28] Varro, *De re rustica* 1.8.5.

[29] Columella, 5.5.17; 5.4.2.

[30] Pliny, *N.H.* 17.185; 14.14.

[31] Pliny, *N.H.* 14.14.

[32] *N.H.* 17.164-165.

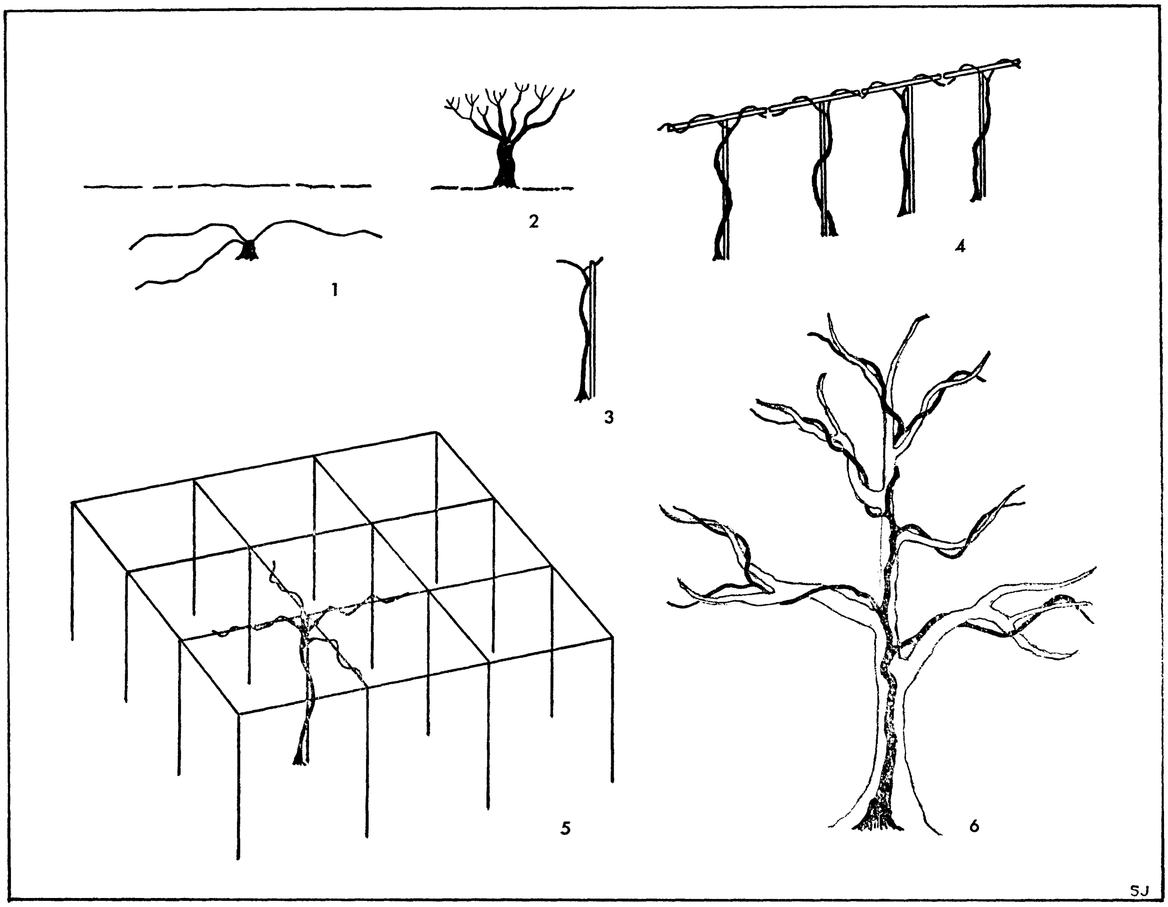
[33] *N.H.* 14.13.

[34] Columella, 5.4.1. Palladius (3.11.14), who wrote in the 4th century, also said that the best vines in the provinces were of this type.

[35] Columella, 5.5.9-12.

[36] Pliny, *N.H.* 17.184; Columella, 5.5.8.

[37] Varro, *De re rustica* 1.8.1; Pliny, *N.H.* 17.164.



Ill. 3. Methods of vine training: 1) branches spread on ground; 2) standing alone without prop; 3) propped with stake without cross-bar; 4) propped with stakes with cross-bars (*vitis iugata, canteriata*); 5) trellised with rectangular frame (*vitis compluviata*); 6) wedded to tree (as in an *arbustum*)

reed, a rope of hair, or hemp, as in Spain and at Brindisi[38] (ill. 3:4). A vineyard of this type was better suited to cold, rainy areas where frost was a danger, for the ground could be better ventilated and warmed.[39]

5. *Vines trellised with rectangular frame* (*vitis compluviata*). This type of training takes its name from the similarity of the rectangular frame to the opening in the ceiling of the atrium in a Roman house.[40] The exact meaning of the term *compluviata* has been much discussed and variously explained,[41] but Varro's and Columella's descriptions leave no doubt as to what is meant. Varro[42] says that vines can be trellised in two ways: in a straight line, as in the district of Canusium, or yoked lengthways and sideways in the form of a compluvium (*compluviata in longitudinem et latitudenem iugata*), as is the practice generally in Italy. Columella gives detailed instructions for training and pruning vines in this type of vineyard in his fourth book, in which he discusses Italian vineyards.[43] He describes the stages by which the vines should be allowed to reach the frames. After the forty-second month the vine should be pruned one foot short of the cross-bar so that it can put out tender shoots. At this stage the vine should be able to support three, sometimes four branches which are then laid out on the bars of the frame,

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[38] Pliny, *N.H.* 17.165-166; Columella, 4.17.8; Varro, *De re rustica* 1.8.1-2.

[39] Columella, 4.17.8.

[40] Pliny, *N.H.* 17.164, 166.

[41] G. Curtel, *La Vigne et le vin chez les Romains* (Paris 1903) 55; R. Billiard, *La Vigne dans l'antiquité* (Lyon 1913) 363-365; White (supra n. 23) 232-233.

[42] Varro, *De re rustica* 1.8.2.

[43] Columella, 4.33.6.

shaping the vine into a star (*in stellam*).[44] (See ill. 3:5. For clarity only one vine is shown but each stake would support a vine.) A bird's-eye view of the open space in each frame would give the appearance of a compluvium. By the fifth year the vine should have four arms, or hardened branches (*duramenta*). In rich soil each arm should eventually be permitted to have two rods each, making a total of eight for the vine,[45] which are then laid out in four directions in star shape, two branches being extended along one part of the frame, with the bar coming between them. The separated vine-shoots should be permitted to run out over the quadrangular openings of the frames.[46] Care must be taken so that mature branches rest on the frame rather than hang from their binding.

The writers stress the advantages of this form of vineyard. The vine spread out in four directions was better anchored and more stable, especially in areas liable to storms and heavy rains. Columella likens such a vineyard with vines supported on every side to troops in square formation. It was also advantageous in warm and drier places, for the vine-shoots filled the frames and formed a roof (*camera*) which shaded the thirsty earth.[47] Columella warns, however, that if a vine creeps out of its frame, and into those that belong to other vines, it must be cut back and confined to its own frame.[48]

6. *Vines "wedded" to trees* (*arbustum*). The Pompeians were familiar with this type of culture, for the *arbustum* was popular in Campania where the vines were "wedded" to poplars,[49] as they still are today (ill. 3:6). A wall painting in the House of the Vettii shows Cupids gathering grapes from vines supported by trees.[50] It is of course obvious from their location that the vines in our vineyard were not supported by the trees, for in an *arbustum* trees were planted at least twenty feet apart.[51]

Perhaps we can now determine the method of training used in our vineyard. We have already eliminated the *arbustum*. Since we are certain that our vines were staked, we can also eliminate the first two methods listed by Pliny: the vine spread out on the ground, and the vine standing alone without a prop. The stake cavities found in our vineyard indicate that the stakes were too carefully cut and too substantial to have served as temporary props for vines being trained to stand alone. Then too, reeds were more often used for this purpose. The agricultural writers pay little attention to the single staked vine (I have found only two brief references), and the yoked vine arranged in rows is said to be better suited for cold, rainy climates, which does not describe conditions at Pompeii.

This leaves the rectangular frame, or the *vitis compluviata*, as the most probable method. The ancient authors stress that this is the method most commonly used in Italy, and that it produces the most wine.[52] They also stress that it is suitable for areas with rich soil and hot, dry climate,[53] which is descriptive of Pompeii. Today, in the area, this method is still in use, but in the vineyards that I have visited the vines were not as carefully restrained as Columella recommended; they do however form a covering which shades the soil. We do not know what type of material was used to make the frames in our vineyard. In antiquity the stake or pole (*pertica*) or reeds bound together are most frequently mentioned.[54] The nails found in the interior of the vineyard might have been used to nail frames to the stakes. Some were about 3½ cm., others 7-10 cm. in length. But the nails were found only in the backfill, and not in situ. Today, in the Pompeii area, the frames are most often made of poles or branches.

Unfortunately we found no stakes preserved, so we do not know their height. Columella[55] suggests that the frames should be about five feet above the ground, and never more than seven or less than four. Varro[56] thought that the height of a man should be the limit to the height of a vineyard. According to Pliny[57] the richer the soil and the more level the ground, the greater the height of the cross-bars required. A unique find of a large number of stakes was made during excavation of a villa in the Sarno valley two km. s of Pompeii. They were piled together in the rustic peristyle, apparently ready for use. The excavators carefully noted their good condition; they were almost perfectly preserved, not carbonized as is frequently the case when wood is found in Pompeii and its vicinity. But the length, diameter, and number of stakes were not reported.[58]

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[44] Columella, 4.17.5-6. Curtel's description (supra n. 41) of the *vitis compluviata* is brief and difficult to understand: "C'était une sorte de treille basse dont les quatre cordons s'étendaient sur deux treillages inclinés en forme de toit vers les pieds," and he does not give an illustration. He quotes only Varro and does not consider Columella (see infra n. 47). Billiard (supra n. 41) gives a good description, but illustrates it with a tomb painting (fig. 119, p. 393) which shows only an arbored passageway. Professor White, who has offered still another explanation in his valuable study of Roman farming (supra n. 23) fig. 2, i, p. 235, has generously discussed the problem with me, and he writes me that he now accepts my interpretation.

[45] Columella, 4.21.2-3.

[46] Columella, 4.26.3.

[47] Columella, 4.17.7-8. Curtel (supra n. 41) 55-56 does not realize that Columella is describing the *vitis compluviata*, and on the basis of this passage he incorrectly creates a new method of vine training which he calls *vitis camerata*. As we have seen, in the fifth year the *vitis compluviata* was allowed to fill the frame.

[48] Columella, 4.24.14.

[49] Pliny, *N.H.* 14.10.

[50] A. Mau, *Pompeii; its Life and Art*, trans. F. W. Kelsey (New York 1907), fig. 168, p. 336.

[51] Pliny, *N.H.* 17.202.

[52] Varro, *De re rustica* 1.8.2; Pliny, *N.H.* 17.166.

[53] Columella, 4.17.8.

[54] Columella, 4.16.4; 4.17.1; 4.26.2-3.

[55] *De re rustica* 4.19.1-3.

Two interesting graffiti referring to stakes were found in the villa rustica, Giuliana, near Pompeii. One graffito mentions 1,023 stakes in a big pile (*in acervo magno pali sunt MXXIII*).[59] The other mentions 840 sharp stakes, 460 which were not sharp, a total of 1,300 (*palos acutos DCCCXL qui non acuti CDLX summa MCCC*).[60] The stakes that were "not sharp" may have been used for making the frames.

ESTIMATE OF YIELD

It might be interesting to speculate as to yield. If the unexcavated part of the *insula* (ill. 2) was also planted in vines, as we can probably suppose, there would have been ca. 4,000 vines in the entire vineyard. According to a contemporary viticulture expert, Dr. John R. McGrew, it seems reasonable that each vine pruned to have eight buds per vine (as Columella recommends) would produce about sixteen clusters weighing about half a pound each. This would mean eight pounds of grapes per vine; 4,000 vines would then produce 32,000 pounds, or sixteen tons of grapes. Figuring 150 gallons of wine per ton of grapes this would mean 2,400 gallons of wine. It is interesting to compare this independent estimate, made by a viticulture expert and based on the probable yield in the temperature zone[61] and for the soil conditions at Pompeii, with that made in our first report, based on the capacity of the dolia imbedded in the floor of the fermentation shed, which is 2,750 gallons.[62] The two estimates are very close.

SOIL, TOPOGRAPHY AND DRAINAGE

The ancient Romans were well aware of the importance of soil, slope, aspect and drainage in vine growing. They believed that vines did better on hill slopes,[63] but they knew that a profitable vineyard was possible on level ground if soil and drainage were favorable. The type of vine planted was determined by the physical characteristics of the land. Columella,[64] in advising the vintner as to the vines to choose, says that level ground produces a larger quantity of wine, but hill slopes a better quality. He suggests that, unless the ground is capable of producing a quality wine, the vintner should aim for quantity to get the largest revenue.

A well-drained soil is a most important consideration for any vineyard. The soil in our vineyard is good. The volcanic plain of Campania was known in antiquity for the extreme fertility of its soil and also for its good texture.[65] Pliny[66] describes it well as being "dusty on the surface, and also porous like pumice" so that "the earth allows the frequent rainfall to percolate and pass through it." Vineyards planted on volcanic soil were very productive.

The vineyard is by no means level, although when we began our work in 1966 the area had a level appearance, because, as we were to discover, the previous excavators had leveled the excavated surface with backfill. In our first trench (near the E wall adjacent to the hill of original volcanic debris) we dug down through more than 1¼ m. of lapilli before we came to the ground level of A.D. 79. On the other hand, in the w half of the

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[56] *De re rustica* 1.8.5.

[57] *N.H.* 17.187.

[58] *NSc* (1923) 273.

[59] *CIL* 4.6887.

[60] *CIL* 4.6886.

[61] For the marked effect of temperature on wine production, when expressed as heat summation (sum of the mean daily temperature above 50° F from April through October) see A. J. Winkler, *General Viticulture* (Berkeley and Los Angeles 1962) 58; "The base line is set at 50° because there is almost no shoot growth below this temperature." The summation is expressed as degree-days. Naples has 4,010 degree-days above 50° F (p. 61 Table 3) which would place it in Climatic Region V of Amerine's and Winkler's classification scheme of five Climatic Regions for wine production. Region V includes places that have 4,001 or more degree-days. Pompeii which is slightly cooler might fall into Region IV (3,501-4,000 degree-days).

[62] *AJA* 72 (1968) 73.

[63] Varro, *De re rustica* 1.6.5.

[64] *De re rustica* 3.2.5.

[65] Strabo 5.4.3; Pliny, *N.H.* 18.110-111.

[66] *N.H.* 18.110.

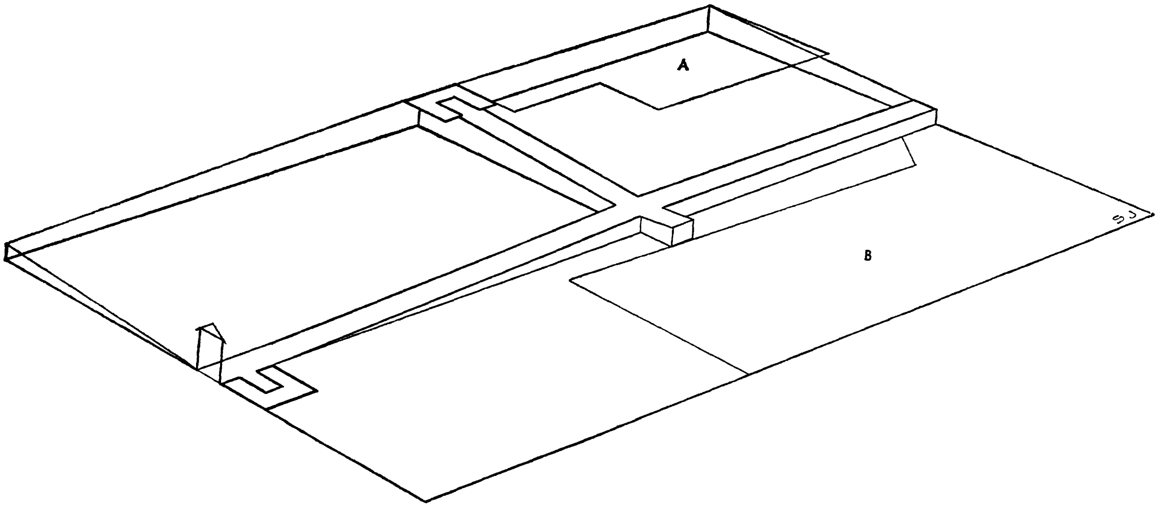
insula the original level of the ground was scarcely below the surface.

When the vineyard was surveyed at the end of our 1970 season,[67] it showed a decided slope downward from the triclinium and the complex of buildings in the NW corner of the *insula.* (The grades of the two intersecting paths are shown in ill. 4.) The slope is slight, and light rains would be easily absorbed by the soil, but drainage away from the buildings protected them during periods of heavy rain. The grade is most apparent in the E-W path from the triclinium to the intersection of the two paths, and in the N-S path from the intersection to the entrance to the vineyard. The grade in this part of the vineyard averages 4-5 percent.

A definite depression down the center of the N-S path was found in that part where the original fill was removed in 1970 (pl. 4, fig. 7). The part of the path nearer the entrance, previously excavated, had shown a similar but somewhat destroyed depression.[68] This marked depression down the center of the slightly sloping path suggests that it served as a drainage channel during periods of heavy rain. Even the small portion of the E-W path uncovered on the other side of the intersection reverses slope, so that rainwater would be directed toward the N-S path.

But since the soil in the vineyard is porous, drainage was not a major problem. More important was the conservation of the water. Rainfall in the Pompeii area is barely adequate for vines and orchard trees; irrigation is necessary for gardens. The constant digging and hoeing recommended by the agricultural writers tended to conserve the moisture by dry farming techniques.[69] This also made it possible to channel the rainwater. The three or four depressions around each root were immediately recognized by our workmen as similar to those they put around their roots to hold the water (pl. 3, fig. 8).

The authorities vary as to the amount of cultivation recommended, but they all agree on its importance. Pliny[70] admits that the number of times that a vineyard should be dug was vehemently debated. No doubt individual conditions and the diligence of the vintner were both factors. By no means all would exhibit the industry desired by Columella,[71] who said that no limit should be set to the number of times that a vineyard should be hoed, since the more frequent the digging, the more beneficial. He does concede, however, that because of expense most newly developed vineyards were dug every thirty days from the Kalends of March to October. He also advised pulling out all weeds, especially grasses, and throwing them on



ILL. 4. Grades of the two intersecting paths. A) unexcavated area and wine complex; B) unexcavated area

the ground (which would also serve as a mulch and conserve moisture). The last digging of the year, which took place after the vintage (September in Italy) and before midwinter, included pruning the surface rootlets (*ablaqueatio*).[72] Columella recommends root-pruning a new vineyard every year for the first five years, and thereafter every three years.

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[67] The survey was made through the generosity of Professor de Franciscis. The surveyor was Giovanni D'Ambrosio.

[68] See *AJA* 72 (1968) pl. 34, fig. 4.

[69] For a discussion of the "dry-farming" techniques practiced in the Mediterranean area see C. E. Stevens, in *The Cambridge Economic History of Europe*^{2}, ed. M. M. Postan, I (Cambridge 1968) 96-104.

[70] *N.H.* 17.188-189.

[71] *De re rustica* 4.5. In another passage (4.28) he speaks again of the importance of frequent diggings, although he is aware that most teachers of husbandry before him were content with three.

A vineyard required more intensive care than any other Mediterranean crop, but if properly cultivated the returns were large. The precision with which our vineyard was planted, and the care with which it had been cultivated, suggests that the ancient vintner was a careful husbandman who enjoyed good returns from his vineyard which, judging from its prominent location, was a much enjoyed showplace. It is quite possible that the vintner did most of the work in the vineyard himself, aided perhaps by members of his family, or by day-laborers who were available for hire when the grapes were ripe.[73] The vineyard may have been planted in several varieties that matured at different times, thus spreading out the work at vintage.[74] A vineyard of two *iugera* could easily have been cared for by one vintner. In fact Columella says that one man could care for a vineyard of seven *iugera*,[75] probably more in this area, because of the ease with which Campanian soil could be cultivated.[76]

The close spacing of the vines had suggested to us during our first season that this vineyard had been hand-cultivated and not ploughed. A study of the detailed contour of the surface of the soil in the undamaged area that we excavated definitely showed that the vineyard had been dug by hand (pl. 3, fig. 8). The tool that Columella recommended was the two-pronged hoe, or mattock (*bidens*). Although frequently mentioned by the Latin authors, surviving examples are almost nonexistent.[77] Excavation of the buildings in the NE corner of the *insula* would probably yield the actual tools used in the maintenance of this vineyard.[78]

BONES

In the course of our excavations numerous bones were found. These were identified through the kindness of Dr. Henry Setzer, mammalogist in charge of the African section at the Smithsonian Institution. Fourteen of the fifty-two animal remains were too fragmentary to be identifiable. Six, perhaps seven, species are represented among those identified: ***Bos taurus*** (domestic cow), 14 bones plus one not entirely certain; ***Equus caballus*** (horse), 6 plus one not entirely certain; ***Sus scrofa*** (wild boar) 6; ***Canis familiaris*** (domestic dog) 3; ***Ovis aries*** (sheep) 1; ***Felis catus*** (domestic cat) 1. Four others were either horse or cow bones, one was either a young sheep or *Capra hirca* (goat).[79]

The discovery of these bones is of considerable importance. It was probably the presence of bones, in the limited area that they uncovered, that led the first excavators to name the *insula* the "Foro Boario." Since our excavations have shown that this identification is not valid, the presence of the bones must be otherwise explained. This is made considerably more difficult by the fact that the bones were not found in their original location, but were mixed in the backfill which the earlier excavators had pushed over a good part of the *insula*. Nor do we have any way of knowing how many bones were removed when most of the fill was trucked away.

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[72] Columella, 4.8; Pliny, *N.H.* 17.189.

[73] M. Della Corte, *Case ed abitanti di Pompei*^{3} (Pompeii 1965) 88.

[74] Columella, 3.21.5-11; Pliny, *N.H.* 17.187.

[75] *De re rustica* 3.3.8. Also see Varro, *De re rustica* 1.18.

[76] Columella, 5.4.3.

[77] Columella, 4.5. Vergil, *Georgics* 2.399-400 speaks of the everlasting turning of the vineyard soil with the mattock. See K. D. White, *Agricultural Implements of the Roman World* (Cambridge 1967) 47-50, for a good discussion of the *bidens*. He distinguishes "the heavy *bidens* . . . commonly used for breaking the soil in stony ground, especially where vines and olives were to be planted" from the "*bidens* of lighter weight" which "was in constant use in the vine nursery and the vineyard." The only known example of a surviving vineyard *bidens* is a Gallo-Roman one found in France, now in the museum at Autun, Billiard (supra n. 41) 323, fig. 102, and White, *Agricultural Implements* 49, fig. 28.

[78] Tools for use in a vineyard on the outskirts of Pompeii were among those found in the quarters of the procurator in the House of Menander (I. x. 4). See A. Maiuri, *La casa del Menandro* (Rome 1932) 461-463, who also gives references for other tools found in the vicinity of Pompeii and Boscoreale.

[79] 1. *Bos taurus* (domestic cow), metacarpal. 2. *Bos taurus?* scapula. 3. *Bos taurus*, metatarsal—distal end. 4. Not determinable. 5. *Equus caballus* (horse), ulna. 6. *Canis familiaris* (domestic dog), os coxae. 7. *Canis familiaris*, radius. 8. Not determinable. 9. *Bos taurus*, os coxae. 10. *Bos taurus*, metatarsal. 11. *Bos taurus*, metatarsal. 12. *Sus scrofa* (wild boar), scapula. 13. Not determinable. 14. *Bos taurus*, metatarsal—proximal end. 15. *Bos taurus*, metatarsal—distal end. 16. Not determinable. 17. *Canis familiaris*, radius. 18. *Bos taurus* or *Equus caballus*, vertebrae. 19. *Equus caballus*, tibia—distal end. 20. *Equus caballus*, tibia—center section near proximal end. 21. *Equus caballus*, radius. 22. *Equus caballus* or *Bos taurus* (young), calcaneum. 23. *Equus caballus*, tibia—proximal end (no. 19 and 23 are part of the same bone). 24. Not determinable. 25. *Equus caballus?* rib. 26. Not determinable. 27. Not determinable. 28. Not determinable. 29. *Bos taurus*, molar. 30. *Bos taurus*, molar chip from no. 29. 31. *Bos taurus*, femur—distal end. 32. *Equus caballus*, humerus—distal end fragment. 33. *Ovis aries* (sheep), femur—distal end. 34. *Bos taurus*, calcaneum. 35. *Bos taurus*, second phalanx. 36. *Sus scrofa*, scapula fragment. 37. *Sus scrofa*, lower mandible fragment. 38. *Sus scrofa*, scapula fragment. 39. Not determinable. 40. Not determinable. 41. Not determinable. 42. Not determinable. 43. *Bos taurus* or *Equus caballus*, piece of metatarsal or metacarpal. 44. *Sus scrofa*, tarsus center fragment. 45. *Bos taurus*, metatarsal. 46. *Bos taurus* or *Equus caballus*, rib. 47. *Bos taurus*, metatarsal (sliver). 48. Not determinable. 49. Not determinable. 50. *Sus scrofa*, piece of mandible. 51. *Ovis aries* or *Capra hirca* (goat), metapodial. 52. *Felis catus* (domestic cat), lower left mandible (almost complete).

There is always the possibility, of course, that animals fleeing blindly through the streets at the time of the eruption might have come into the vineyard.[80] The dog and the cat whose bones were found in the vineyard may have belonged to the owner, and the cow and horse bones may well have been those of his animals. It is not unusual to find animals inside the city. The skeletons of two cows were found in a stall in the House of the Faun, one of the most elegant homes in Pompeii.[81] More information might be obtained if the area (ill. 2:a) that apparently comprises the house and garden of the vineyard owner is excavated. Before we began our first excavations in this *insula* in 1966, I interviewed workmen who had helped in the earlier excavations when most of the *insula* was cleared. They recalled that the almost complete skeleton of a horse had been found in the extreme NW part of the *insula*, near the entrance. But they were not able to tell me what had happened to the skeleton.

The presence of wild boar bones, including a mandible with teeth, and the proximity of our vineyard to the amphitheater (the entrance is directly opposite the vineyard entrance) suggested that the boar might have come from the amphitheater. Wild boars were a popular animal in the *venationes* at Pompeii. They are specifically mentioned on the tombstone of A. Clodius Flaccus, duovir for the third time in A.D. 2. His epitaph records the various spectacles that he put on during his three magistracies. Among these was a *venatio* with bulls, bullfighters, wild boars and bears.[82] A boar is likewise included among the animals of the *venatio* pictured on the tombstone of A. Umbricius Flaccus at Pompeii.[83] We do not know if a *venatio* was in progress at the time of the eruption, but a graffito found in the House of Apollo and Coronis (VIII. iii. 24) does tell of a *venatio* that was to be held on an August 28.[84]

A close examination of the bones, however, suggests another explanation. Eleven show definite cleaver marks, and evidence of having been split for marrow. Of these six are *Bos taurus* (nos. 3, 10, 11, 31, 34, 47) (pl. 3, fig. 9),[85] two *Equus caballus* (nos. 5 and 20) (see fig. 10), one *Bos taurus* or *Equus caballus* (no. 18), and two not determinable (13 and 24). Three others have marks that are probably tool marks: one of these is *Bos taurus* (no. 15), one *Bos taurus* or *Equus caballus* (no. 46); one is *Sus scrofa* (no. 12). Marrow was regarded as a choice food in antiquity,[86] as it still is in some parts of the world today. It begins to look as if these bones might be the remains of meals served in one or both of the triclinia in the vineyard. If so, this may incidentally give us valuable insights into Roman eating habits. Cow and sheep bones are to be expected, also those of the wild boar, for the wild boar was considered a delicacy.[87] Horse meat for human consumption is not mentioned in the ancient sources,[88] but it is used in Italy today, where it is commonly believed to be especially nutritious for children and for the aged. One might have expected lighter refreshments to have been served in the vineyard. The discovery that meat was on the menu may indicate that it was a more important part of the Roman diet than has been sometimes thought.[89]

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[80] Some years ago I found the bones of a donkey in the minuscule garden at the rear of a recently excavated small house (I. xii. 16). The donkey, frightened when the lapilli began to fall, apparently fled blindly down the street, and ran by error through the open door of the house where it was trapped by the falling ashes.

[81] *NSc* (1900) 31.

[82] *CIL* 10.1074; G. O. Onorato, *Iscrizioni Pompeiane* (Florence 1957) no. 91.

[83] F. Mazois, *Les ruines de Pompéi* 1 (Paris 1812) 47, 51; pl. 30 fig. 1; pl. 31 fig. 3; pl. 32 fig. 3.

[84] *CIL* 4.1989; G. Fiorelli, *Descrizione di Pompei* (Naples 1875) 329.

[85] The bones discussed in this paragraph are identified supra in n. 79.

[86] Don and Patricia Brothwell, *Food in Antiquity: A Survey of the Diet of Early Peoples* (London 1969) 27: "During the whole history of man, bone marrow has served as food. The result is that at the majority of prehistoric sites, much of the bone debris is in the form of splintered shafts or separated proximal and distal ends of long bones."

[87] The discovery of a mandible with teeth is not surprising, for it was a common practice among the Romans at this time to serve the boar whole. See Pliny, *N.H.* 8.210; Juvenal 1.140-141.

[88] Pliny (*N.H.* 28.265) gives, as a specific for the diseases of pigs, horse flesh thoroughly boiled and taken in drink.

Professor Frank Brown, visiting our excavations in 1970, remarked that serving the public in the vineyard reminded him of the custom found in certain parts of the Near East today: it is fashionable for city residents to go to the orchards at the edge of town where meals are served, especially at the time when the apricot trees are in bloom. My colleague, Professor George Callcott, tells me that he enjoyed refreshments served in an arbor in an orchard setting, while traveling in Jugoslavia. It may well be that the meals served in our vineyard were an important source of income for the vintner, and the means of retailing much of the wine that he produced. The discovery of bones, and their identification as debris from vineyard meals (and perhaps also as those of animals that had fled into the vineyard during the eruption), at long last explains why this *insula* was mistaken by the first excavators for the "Foro Boario."

ADDENDUM

In our first report[90] we speculated that the unexcavated area in the NW corner of the *insula* probably contained the winegrower's home (ill. 1:a), and that he might have sold some of his wine in the shops fronting on the Via dell'Abbondanza. When we returned to Pompeii in 1972, we were able for the first time to see the façade of the building in the unexcavated area. The dense overgrowth of brambles and saplings which covered it and filled a good part of the Via dell'Abbondanza had been cleared away, and the street taken down to its original level in connection with the current excavation of the Porta di Sarno. When we examined the façade of the building we were surprised to find that there were only three entrances, not four, as shown on the official Pompeii plan.[91] Dr. Giuseppina Cerulli-Irelli, Director of the Excavations at Pompeii, generously gave us permission to excavate the front of the shop where there was evidence of a counter. We found that the shop had a single masonry counter (150 cm. long, 60 cm. wide, and 85 cm. high), with the usual step-shelves for glasses and cups. These were three in number, about 15 cm. wide and 10 cm. high. In the W end of the counter we found a single cavity 65 cm. deep, 34 cm. in diam. at top, and 18 cm. in diam. at bottom, but the pot was not in place (ill. 5). A few narrow pieces of marble about the width of the shelves were found when we emptied the lapilli from the cavity. After the earthquake of A.D. 62 shop counters were frequently decorated with pieces of reused marble. The plaster on the front of the masonry counter was painted red and decorated with a single circular inset of variegated marble. The groove at the street in which the shutters were drawn when the shop was closed was perfectly preserved, and a part of the metal which fastened the shutters from the inside was still intact.

Four columns (of which only the lower parts are preserved) stood at the edge of the walk in front of the shop (ill. 2:m and ill. 5), and undoubtedly supported a roofed protection for the passers-by who stopped to buy wine. Two similar columns formed a porticoed entrance on the S side of this *insula* across from the amphitheater (ill. 1:c).[92] Such porticoes have been rarely found at Pompeii, and they seem to indicate that a property had some special significance.

CONCLUSION

The discovery of this large vineyard, belonging to an unknown vintner, together with its facilities for making wine (which included a room for a large beam-press and a fermentation shed), as well as its two triclinia and wineshop, is an important one. Destroyed before the grapes were ready for harvest on a late August day almost 1900 years ago, it gives us the first detailed picture of the production and sale of one of the most important staples of Roman life.

The results of the 1970 season have made it possible to describe ancient Roman viticulture as displayed in this important vineyard, the first of its kind ever found. The vines, planted with mathematical precision exactly four Roman feet apart, were each accompanied by a carefully-cut stake. It seems reasonable to suppose that the vines were trained on a frame (*vitis compluviata*) in the manner still popular in the Pompeii area. Two arbored pathways divided the vineyard into four parts. The N-S path divided the vineyard into two equal parts; the E-W path was a little off center so

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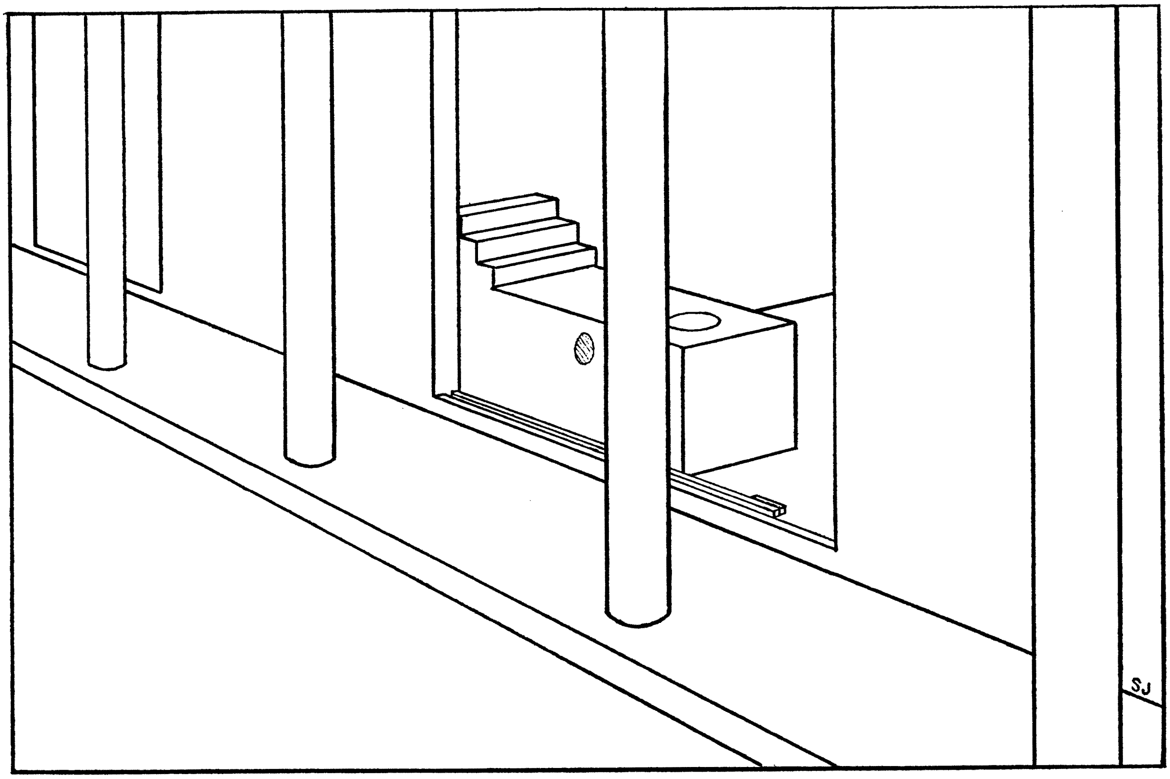
[89] For the place of meat in the Roman diet see L. A. Moritz, *OCD*^{2} *s.v.* "food" and Jacques André, *L'Alimentation et la cuisine à Rome* (Paris 1961) 137ff.

[90] *AJA* 72 (1969) 72.

[91] The correct entrances are shown in ill. 2.

[92] See *AJA* 74 (1970) ill. 4 for sketch of portico.



ILL. 5. Wineshop and portico on the Via dell'Abbondanza

as to give access to the triclinium near the wine building; a third path lay along the N wall. Columella recommended such paths for the use of the laborers carrying stakes, repairing frames or gathering fruit. Excavation of the buildings in the NW corner of the *insula* would probably uncover the actual tools used in the maintenance of the vineyard. Trees planted at the edges of the vineyard, along the paths, and at random in the interior probably included, in addition to the olive tree that we identified, fruit and nut trees as well as willows and poplars to furnish withes for tying the vines.

Moreover, the discovery that a large and valuable piece of land within the city walls was planted in vines is of special significance, because of its implications for the study of ancient land use and city-planning.[93]

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[93] The discovery that this huge *insula* was planted in a vineyard makes me believe that other large open areas in the city may also have been planted, and not used for commercial or other purposes. During the summer of 1971 I made a systematic survey of those parts of Pompeii uncovered during the last period of extensive excavation (1951-61), to determine the open areas in which it was still possible to make subsoil excavations and recover the ancient planting pattern. Several important areas were excavated during our 1972 season, and in each it was possible to recover the planting pattern and establish land use. These excavations will be described in detail in a subsequent report.

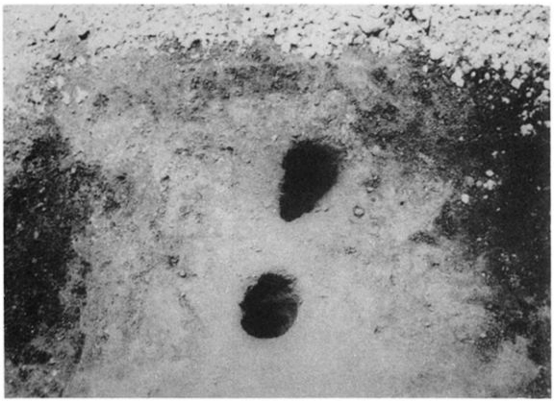

Fig. 1. Cavities left by stake (top) and vine root

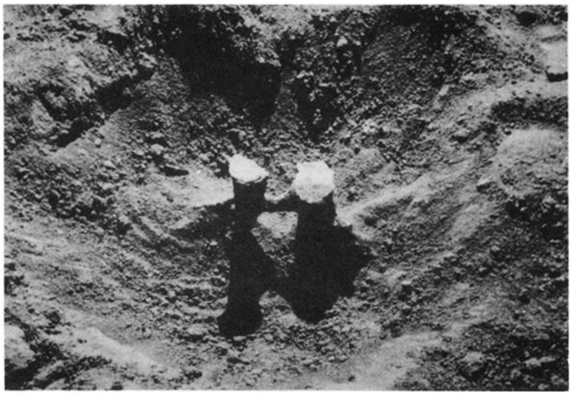

Fig. 2. Cast of stake (L) and vine root with side root reaching behind stake

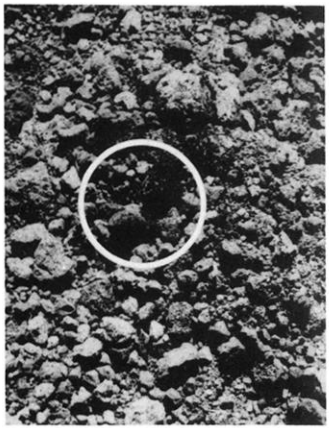

Fig. 5. Carbonized olives as found in vineyard

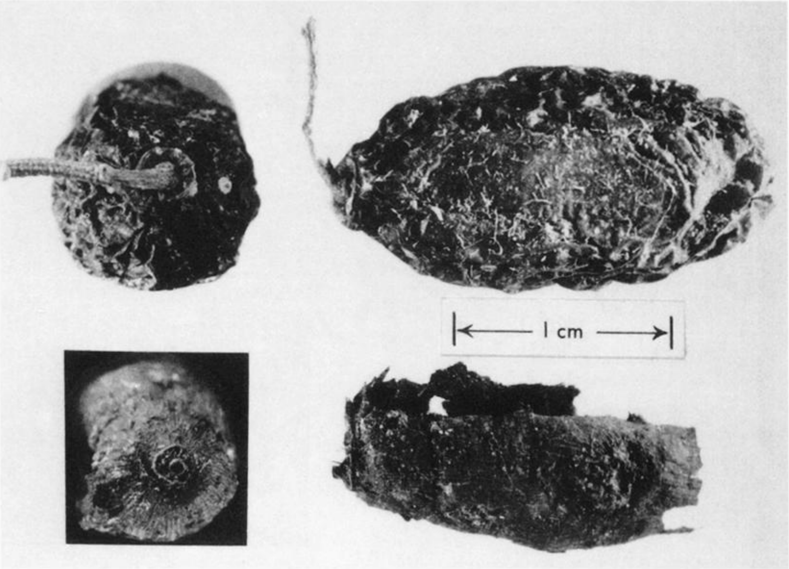

Fig. 6. Olive, *Olea europaea* L. Top: from US National Arboretum Herbarium. Bottom: specimen found in vineyard

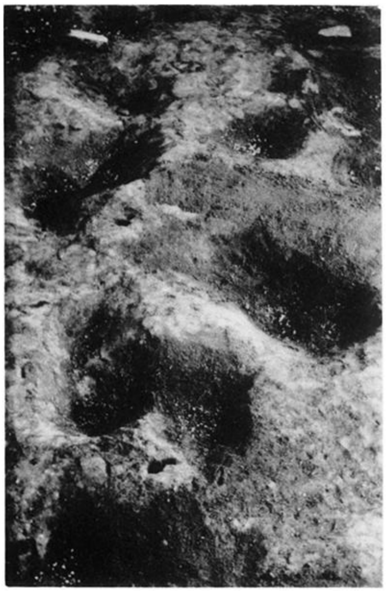

Fig. 8. Stake and root cavities with depressions to hold water

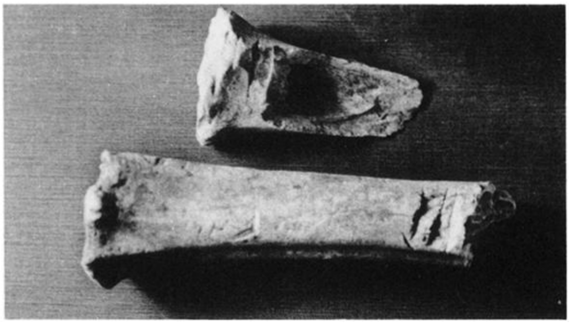

Fig. 9. Cow (*Bos taurus*) bones split for marrow, tool marks visible

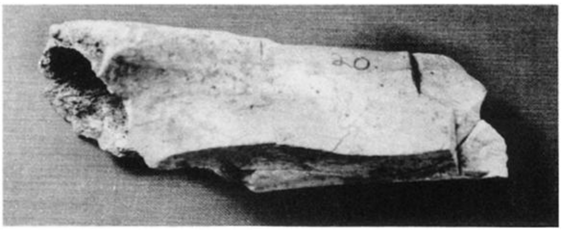

Fig. 10. Horse (*Equus caballus*) bone split for marrow, tool marks visible

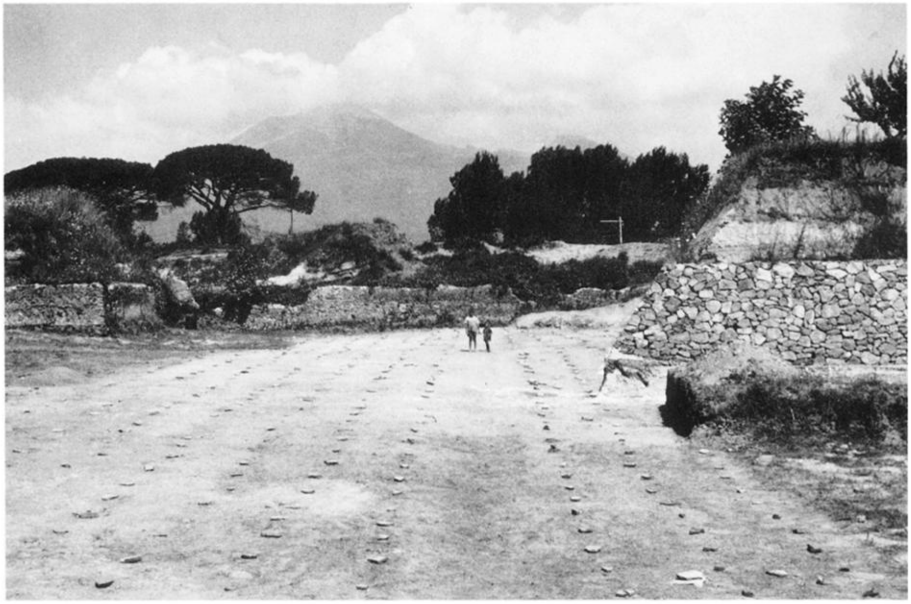

FIG. 4. N-S path looking N toward Vesuvius

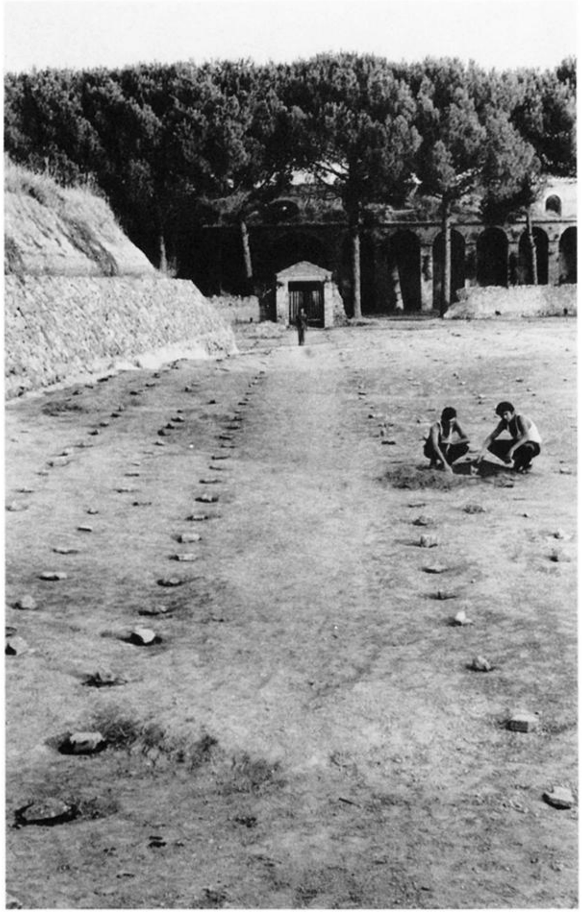

FIG. 3. N-S path looking S toward amphitheater

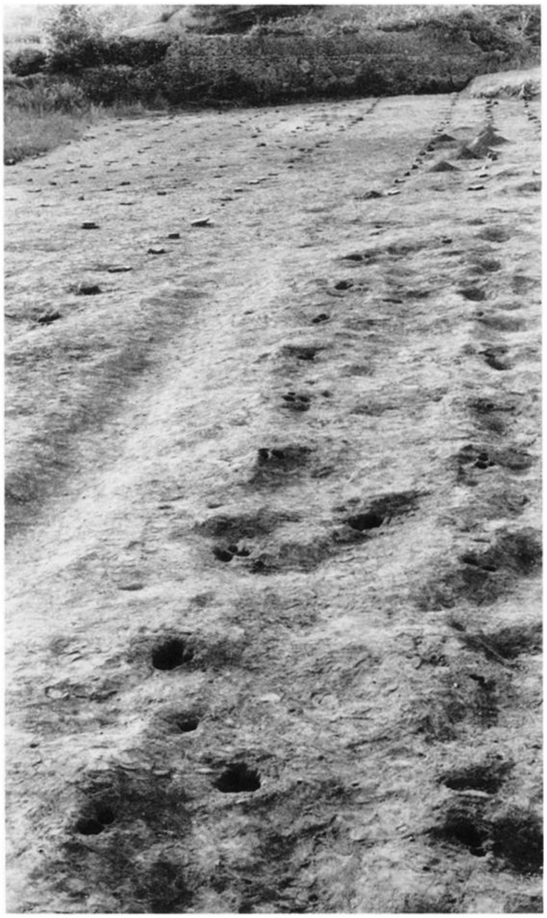

FIG. 7. Original contour of vineyard surface, depression down center of N-S path. Stones cover stake and root cavities at rear

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The Discovery of a Market-Garden Orchard at Pompeii: The Garden of the "House of the Ship *Europa*"[*]

WILHELMINA F. JASHEMSKI

PLATES 80-82

The garden of the "House of the Ship *Europa*," located in the SE part of the city, to the W of the amphitheater, in Region I, *insula* xv, is one of the large open areas excavated by the University of Maryland during the 1972 season.[1] The two houses in *insula* xv[2] (*Europa* at entrance 3, with its shop at 2, and the house at 1) appear to be a single property, and have a common open area at their rear, which occupies much of the insula (ill. 1). The "House of the Ship *Europa*" takes its name from the large graffito of a ship (1.50 x 1.05 m.) labeled *Europa* (ill. 2), found on the north wall of the peristyle in 1957 during the excavation of this once beautiful and noble house.[3] This much studied graffito is so carefully drawn that it could have been made only by an experienced sailor, or by a person who was intimately acquainted with the large merchant ships in use at the time.[4] The name *Europa* probably refers to a specific ship.[5]

It is commonly believed that the graffito reflected the commercial activity of the occupant of the house, which had been converted to such use by the time of the eruption of Vesuvius, but the exact nature of the commercial activity is not known. A hearth had been installed in the N portico of the peristyle, and at the time of excavation some dolia were found in the area that had once been a beautiful garden. The two basins in the small room

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[*] An earlier draft of this paper was given at the Seventy-fourth General Meeting of the Archaeological Institute of America at Philadelphia on December 29, 1972. Funds for the excavations were provided by the General Research Board of the University of Maryland and the National Endowment for the Humanities. Trucks, additional workmen, and other valuable assistance were provided by the Administration at Pompeii. All photographs (except pl. 82, figs. 10-14 by the U.S. Department of Agriculture), ills. 3, 4 and 5, and statistical studies are by Stanley A. Jashemski.

[1] Our work at Pompeii from June 19-August 17, 1972 was again greatly facilitated by the generous cooperation and gracious hospitality of Prof. Alfonso de Franciscis, Superintendent of Antiquities for the Provinces of Naples and Caserta, and of Dr. Giuseppina Cerulli Irelli, Director of the Excavations at Pompeii, who again generously made available the facilities at Pompeii. Domenico Pelli, Chief Assistant at Pompeii, also gave valuable help and advice. Mr. Nicola Sicigiano was again our able foreman. Gratitude is also expressed to Dr. Frederick G. Meyer, Research Botanist in charge of the U.S. National Arboretum Herbarium, for his generous help in identifying carbonized plant specimens and comparing them with contemporary specimens; to Prof. G.W. Dimbleby, of the Institute of Archaeology, University of London, who so generously made our pollen analyses; to Joan Sheldon, Lecturer at the Institute of Archaeology, University of London, who identified the carbonized wood found in this garden; to Dr. John MaCay, U.S. Department of Agriculture, for invaluable counsel regarding the technical aspects of nut and fruit culture; to Dr. John R. McGrew, Research Plant Pathologist, U.S. Department of Agriculture, Plant Science Research Division, Beltsville, for advice on matters pertaining to viticulture; to Dr. Albert Piringer, Assistant Director, Chesapeake and Potomac Area NE Region, Agricultural Research Service, U.S. Department of Agriculture, for much helpful advice on fruit trees and related matters; to Dr. Henry Setzer, Mammologist in charge of the African Section at the Smithsonian Institution, who identified the bones found in our excavations; to Dr. Karl Krombein, Senior Entomologist at the Smithsonian Institution, to Dr. Paul Hurd, Jr., Chairman of the Department of Entomology, at the Smithsonian, and to Dr. Rose Warner and Dr. John Kingsolver, U.S. Department of Agriculture Research Entomologists at the Smithsonian who identified the carbonized insects found in our excavations.

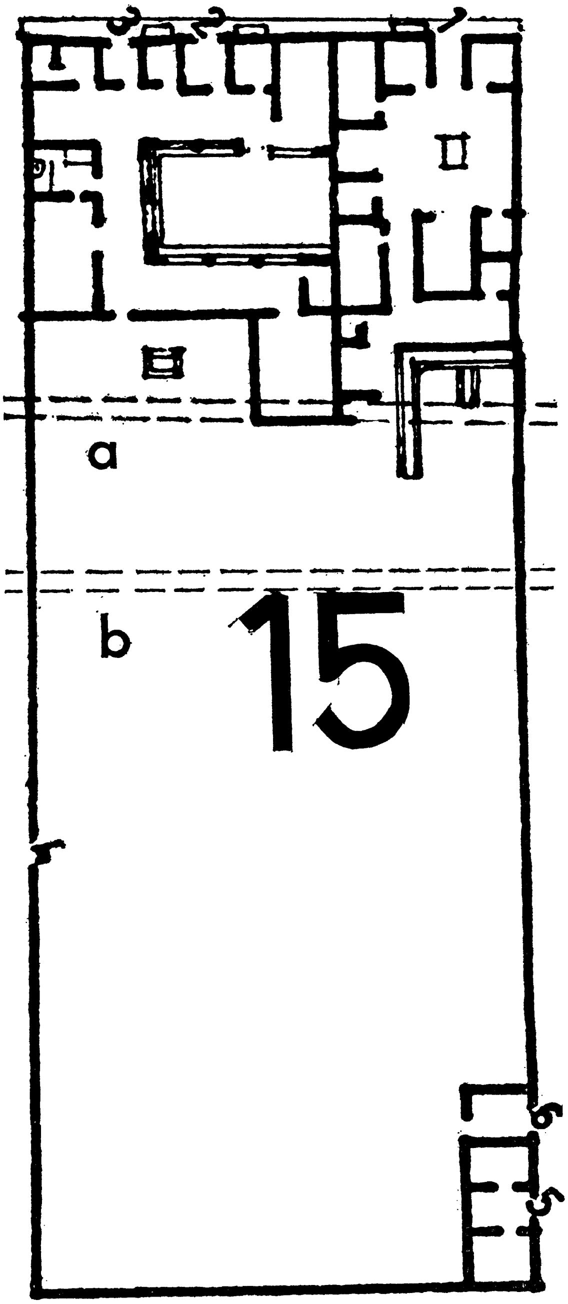
During our 1972 season the gardens at I. xiv. 2 and I. xx. 5 were also excavated. Excavation of the large garden at II. viii. 6 was begun and completed in 1973. Trial excavations were made in four other gardens. These excavations will be described in subsequent reports.

[2] This is the number of this *insula* on the plan of Pompeii published by Hans Eschebach (*Die Städtebauliche Entwicklung des antiken Pompeji*, F.H. Kerle Verlag, Heidelberg 1970), which will now be considered the official one. When G. Fiorelli became the Director of the Excavations in 1860, the city was divided into nine Regions, the *insulae* in each Region were numbered and each door on the street was given a number, so that each house could be conveniently located by three numbers. Subsequent changes, however, especially in the boundaries of Regions I and II, have unfortunately meant a change in the numbers of many *insulae*. This *insula* (now I. xv) is called I. xvii in the *Giornale dei lavori*, 1957 (unpublished), and II. xv in *CIL* IV Supplement part 3, Fascicule 4.

[3] Amedeo Maiuri, "Navalia Pompeiana," *RendNap* 33 (1958) 18-22. *Insula* I. xv was called I. xvii at the time that Maiuri wrote this article.

[4] I owe this observation to the French naval architect, Jacques Thurneyssen, who is making a study of the ships pictured in the Pompeian graffiti. See also Maiuri (supra n. 3) 19.

[5] The inscriptions other than *Europa* are anterior to the graffito of the ship and are not related to it. See Maiuri (supra n. 3) 19 and note 2.



Ill. 1. Region I, insula xv from plan of Pompeii published by H. Escheback, *Die Städtebauliche Entwicklung des antiken Pompeji* (Heidelberg 1970). a) Fontana's channel; b) corrected location of channel

off the center of the W side of the peristyle suggested to Maiuri that the house might have been converted into a fullonica,[6] but the absence of treading stalls makes this identification untenable.[7] Others have tried to explain that the large number of amphorae found in the SE corner of the portico suggests that they were manufactured in this house. There is, however, no kiln. The other house, too, had obviously sunk from its former status. A cistern puteal partially blocked the door to the garden, and a scarcely private latrine had been clumsily installed in the small room that served as an entrance to the garden. This house perhaps furnished dormitory space for the laborers.

It has been commonly believed that the open area at the rear of the house was an integral part of the commercial establishment, and that it perhaps served as a warehouse, distribution center, or a work area. Our discovery that the huge insula to the N of the amphitheater at Pompeii was a vineyard,[8] and not the Foro Boario, or Cattle Market, as had been thought for so many years, made me believe that other large open areas in the city were perhaps also planted, and not used for commercial, or other purposes. In 1971 I made a systematic survey of those parts of Pompeii uncovered during the last period of extensive excavation (1951-1961), to determine the open areas in which it might still be possible to make subsoil excavations and recover the ancient planting pattern. Even in areas that have been previously excavated, I have been able to find the ancient root cavities, if modern vegetation has not been too destructive.[9] Woody bushes completely covered this area when we began work, and I was fearful that even if it had been planted, as I strongly suspected, all evidence would be destroyed. We first cut all the heavy growth and carried it outside the insula, from where it was trucked away.

There was considerable resistance on the part of my foreman to working at this site. He assured me that here I would find no root cavities, so prevalent was the belief that this was a commercial property. We began to work in the SE corner of the insula, near the wall, and we immediately found a few

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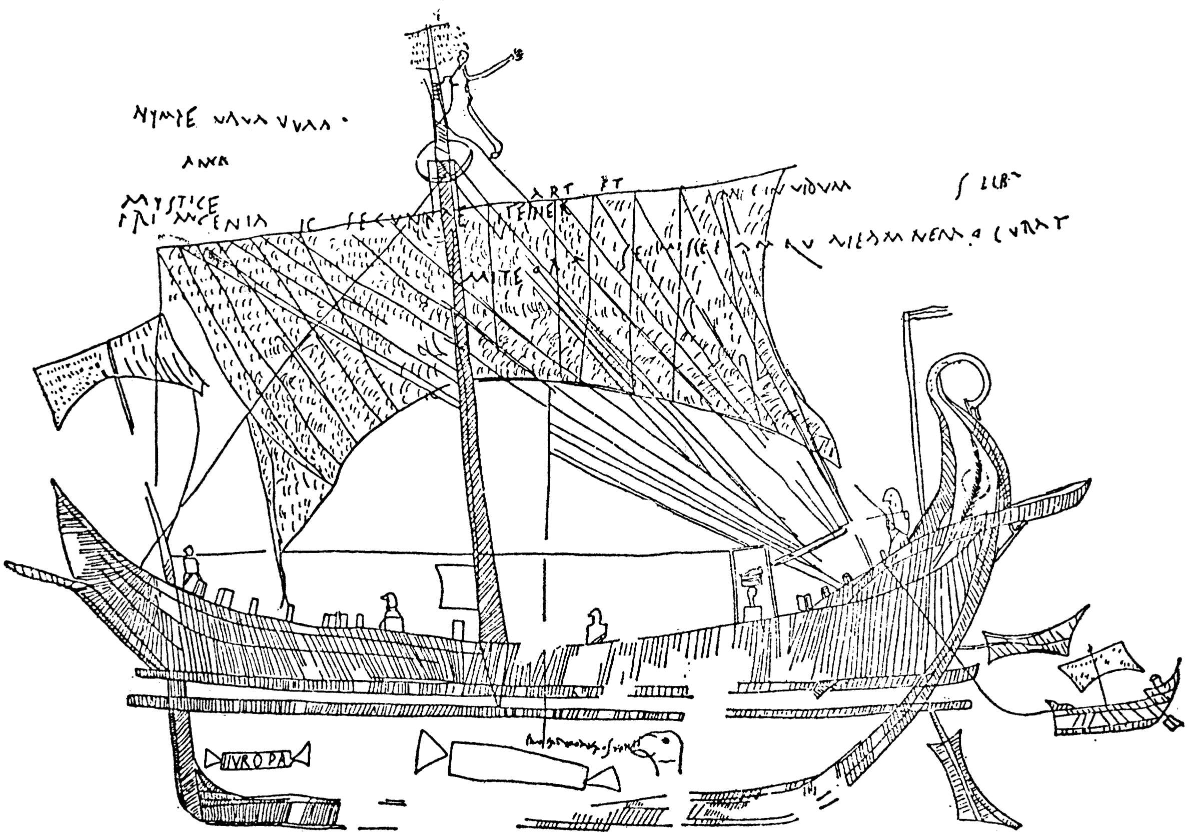
[6] Maiuri (supra n. 3) 19.

[7] This is the opinion of Prof. Walter Moeller, who is completing for publication his study of the woolen industry at Pompeii. During the summer of 1973 Prof. Masanori Aoyagi of the University of Tokyo made a thorough study of this house, and he tells me that he has found no evidence for such commercial activity.

[8] For the excavation of this vineyard → *AJA* 72 (1968) 69-73, pl. 33; → *AJA* 74 (1970) 63-70, pl. 17; → *AJA* 77 (1973) 27-41, pl. 3-4.

[9] See *AJA* 72 (1968) 70, 72 for the technique used in locating and making casts of ancient roots.



Ill. 2. Graffito of the Ship *Europa* from A. Maiuri, "Navalia Pompeiana," *Rendiconti dell'Accademia di Archeologia Letteratura ed Belle Arti di Napoli* 33 (1958), fig. 2, p. 21

cavities, left by the decay of the ancient roots. But as we extended our excavation toward the center of the garden we found no more, and my foreman felt vindicated. An examination of the soil, however, showed that it had been badly damaged by the passage of trucks, when the site was originally excavated. We next tried the narrow ramp along the E wall (ill. 3), where there had been no trucks, and we found beautifully preserved root cavities.

TOPOGRAPHY

The unusual split-level topography of this area (ill. 3) is due to the marked difference in level between the street in the front, and the one at the rear of the property. The open area directly behind the houses is much higher than the larger lower area at the rear of the insula. A ramp along each of the long walls, leading to the lower level, followed the natural slope of the streets outside. One of the most prominent features of this property was a huge hole in the NW corner of the lower area. My foreman, who had assisted in the original excavation of this site, assured me that the hole was an ancient one; the lapilli which had filled it had been removed by the original excavators. Steps led from the upper level to the hole (ill. 3 and pl. 80, fig. 1). When we cleaned the heavy growth of weeds from the hole, it had a noticeable yellow color. A preliminary test conducted at the University of Naples indicates that the soil may be potter's clay, but of a quality that would have required much work to refine.[10] If so, this may be the source of the clay used in the lamp and fritillus factory nearby (I. xx. 3). This hole is the largest of four unusual ones that were found in this property and that need to be explained. There was a second smaller hole, also previously excavated, in the SW corner of the lower garden. We found a third hole,

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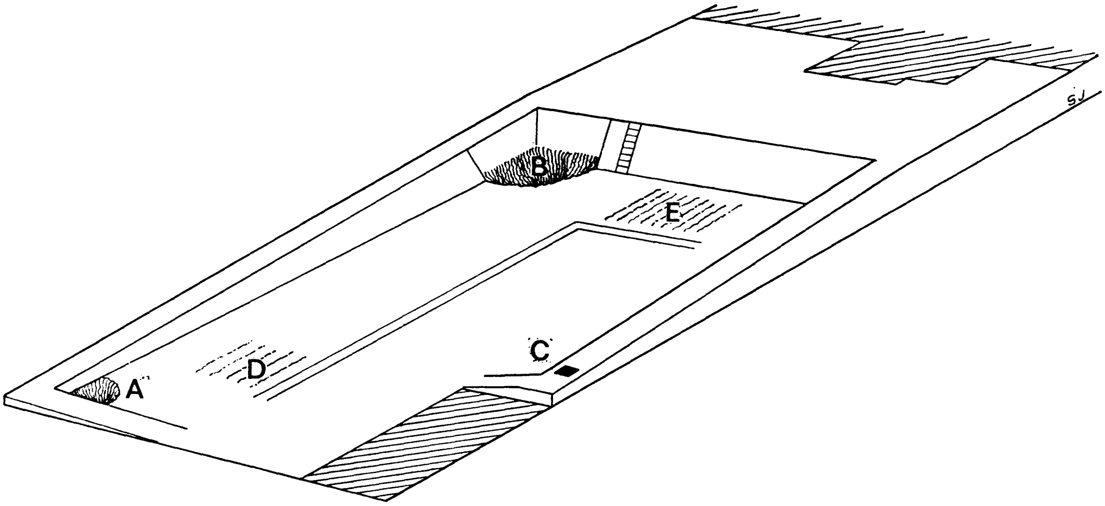
[10] Information in a letter (written Dec. 12, 1972) from Dr. Giuseppina Cerulli Irelli, Director of the Excavations at Pompeii.



Ill. 3. Topographical Plan of I. xv. a) small hole; b) large hole; c) square hole; d) SW vegetable garden; e) N vegetable garden

which was quite different, at the S end of the ramp along the E wall. When we removed the lapilli, we found an opening with clean cut edges, 86 cm. square; the cavity was 125 cm. deep, with the sides also cleanly cut (ill. 3). A large area in the upper garden was also filled with lapilli; this at first appeared to be a very large root cavity, then another large hole. Eventually, much to our surprise, we reached an arched masonry vault of the underground canal built in the sixteenth century by Fontana, to bring water from the Sarno River to Torre Annunziata. This was not where it had been located on the official plan, but further to the south (ill. 1).

PLANTING PATTERN

We soon found an area with nine distinct plots separated by furrows in the N part of the lower garden (ill. 3; pl. 80, fig. 2); but it was only after we had spent several days removing lapilli, badly compacted by trucks during the original excavation, that we uncovered a second area, with five plots separated by furrows, in the SW part of the lower garden (ill. 3; pl. 80, fig. 3). The planting pattern in the rest of the lower garden was for the most part quite regular (ill. 4 and pl. 81, figs. 4 and 5). There were single cavities fairly evenly spaced, with distinct depressions for holding water on each side, reminiscent of those found previously in our large vineyard (II. v).[11] There were no depressions, however, in the space between the two rows that run down the center of the garden. This space, which was slightly higher, served as a path, to give the gardeners access to various parts of the garden (ill. 4; pl. 81, figs. 4 and 5). Columella,[12] in his manual on agriculture, recommends that vineyards be divided by footpaths, for the use of laborers working in the vineyard and in gathering fruit. This path was not as wide or as pretentious as the arbored passageway that we found in the large vineyard,[13] but it was quite adequate to give easy access to both the vineyard and the two vegetable gardens.

We also found root cavities, somewhat irregularly spaced, and of varying size, at the back of the lower garden, on the narrow ramps along the walls, and in the upper area at the rear of the two houses (ill. 4). The discovery of Fontana's channel, of course, explained why we had found no root cavities in that part of the upper garden; they had been destroyed during the construction of the canal, for the underground channel had cut to the surface of the garden at that place. The soil in the SE part of the lower garden had been too destroyed by trucks at the time of original excavation for any

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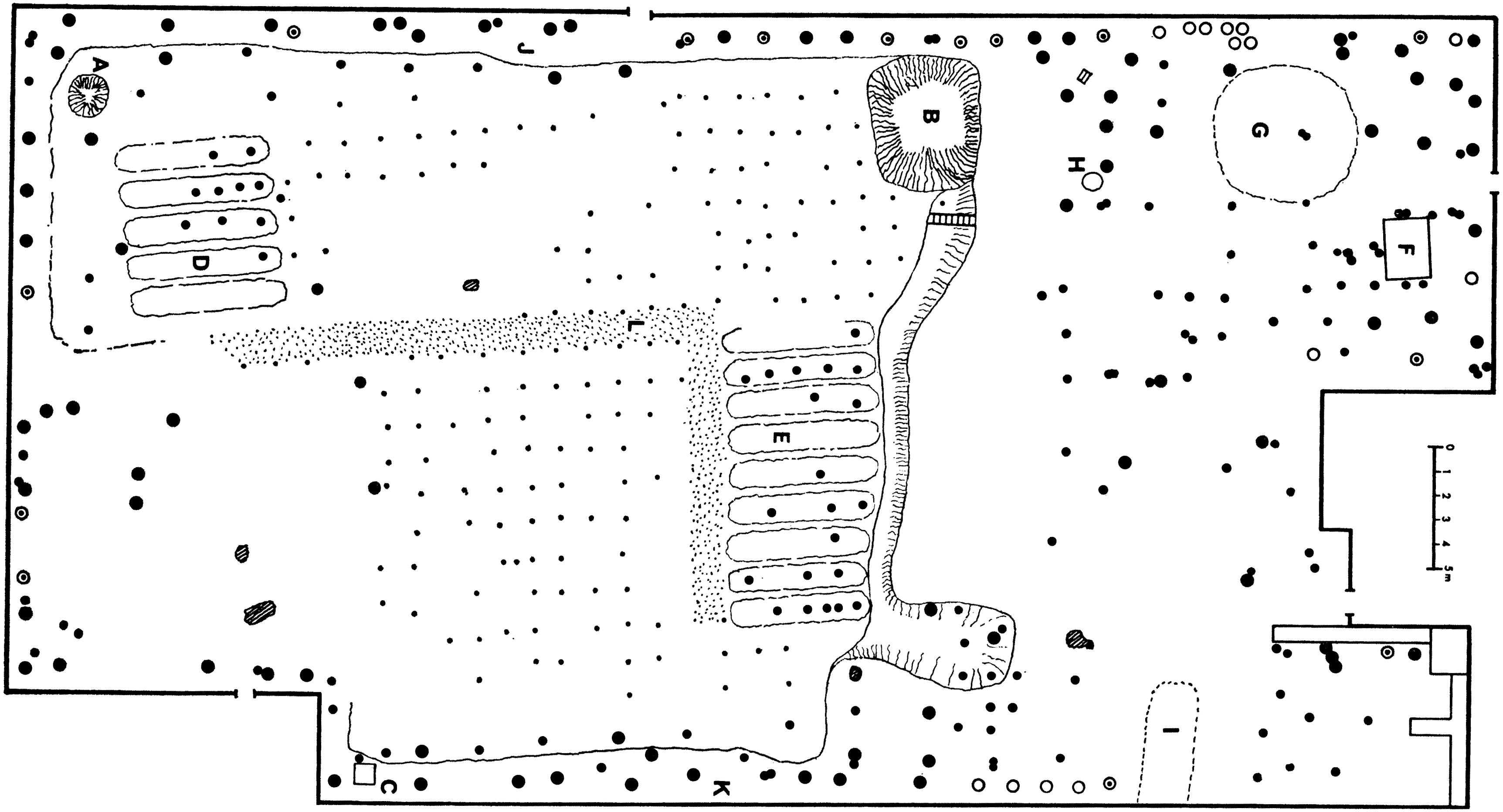
[11] See *AJA* 72 (1968) 73 and pl. 34, figs. 6 and 7; *AJA* 77 (1973) 30 and pl. 3, fig. 8.

[12] *De re rustica* 4. 18.

[13] *AJA* 74 (1970) 65-66, and pl. 17, fig. 6; pl. 18, fig. 10; *AJA* 77 (1973) 31-32 and ill. 2, pl. 4, figs. 3 and 4.



Ill. 4. Market-garden orchard (I. xv). a) small hole; b) large hole; c) square hole; d) SW vegetable garden; e) N vegetable garden; f) basin; g) pile of crushed lava; h) cistern; i) Fontana's channel; j) W ramp; k) E ramp; l) path. Dots indicate grapevine roots; small solid circles indicate roots 10 cm. or less in longest diameter; large solid circles indicate roots 11 to 29 cm. in longest diameter; irregular shapes indicate tree roots 30 cm. or more in longest diameter. Large empty circles indicate pots; circles with dots indicate root cavities containing pots

small cavities that might have been there to be preserved.

On the W side of the upper garden, when we cleared away the vegetation which covered it, we found a large pile of crushed lava. Opinions differed at Pompeii, as to whether it was ancient or modern. Only excavation could tell. If there were root cavities filled with lapilli, the pile was modern. We dug a trench, and we found root cavities, but they were filled not with lapilli, but with bits of crushed lava (pl. 80, fig. 6). It had been placed in the garden not too long before the eruption, and piled around a tree; when the roots decayed, the crushed lava filled the cavity. There were many huge blocks of lava nearby that had not yet been crushed at the time of the eruption. The planting pattern suggests that we would probably find still other roots if we were to remove the pile and excavate under it (ill. 4). We also uncovered a pile of lime in the peristyle; nearby was an amphora filled with lime. The ancient Pompeians used the same formula for cement that is still used today, crushed lava and lime.

IDENTIFICATION OF ROOT CAVITIES

At the end of the summer we had found a total of 416 root cavities (ill. 4). We now face the problem of identifying them. The planting pattern offers definite help, as do the shapes and sizes of the cavities. The two furrowed areas were undoubtedly vegetable gardens, similar to those found at the edge of vineyards and orchards in the Pompeii area today. Pliny[14] gives a good description of the way such a garden was laid out by marking out the plots and bordering "these with sloping rounded banks, surrounding each plot with a furrowed path to afford access for a man and a channel for irrigation." Columella[15] gives a more poetic description:

> then let him take
> The shining hoe, worn by the soil,
> and trace
> Straight, narrow ridges from the
> opposing bounds
> And these across with narrow paths divide.
> Now when the earth, its clear
> divisions marked
> As with a comb, shining, from squalor free,
> Shall claim her seeds. . . .

Gardens laid out in this way were observed at the time of excavation in the House of Pansa (VI. vi. 1)[16] and in the House of Epidius Rufus (IX. i. 20).[17]

The root cavities of the vegetables in our furrowed plots were too small to be preserved, but a succession of vegetables would probably have been grown. These could well have included the onions[18] and the cabbage[19] (an ancient luxury), for which Pompeii was famous. Today, Pompeii is also famous for its vegetables; over 700 railroad cars of cucumbers, lettuce, onions, cabbage, and cauliflower are sent every summer to Germany and Switzerland.

The twenty-one irregularly spaced root cavities (the longest dimension at ground level ranging from 5 to 8 cm.; depth 11½ to 30 cm.) found in the N vegetable garden, and the ten cavities (2½ to 7½ cm.; depth 8 to 37 cm.) in the S garden appear to be those of small trees such as are found in similar vegetable plots in the area today.

The regularly spaced small roots in the lower garden remind us of the planting pattern in our large vineyard (II. v), and they appear to be vine roots. The cavities are four and a half Roman feet apart, slightly farther than those in the large vineyard which were exactly four feet apart,[20] but within the range recommended by the ancient agricultural writers for rich soil.[21] The cavities are slightly smaller, however (approximately 2 to 4 cm. in diameter), and there is only one at each location, which indicates that the vines were not over two years old, and, as my workmen told me, not yet old enough to be staked.

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[14] *N.H.* 19.60.

[15] *De re rustica* 10.90-94.

[16] F. Mazois, *Les ruines de Pompei* (Paris 1824) 2.83 and pl. 42.

[17] G. Fiorelli, *Gli Scavi di Pompei dal 1861 al 1872* (Naples 1873) 63 ("quest' orto serbando ancora le tracce dell' antica coltivazione") and tav. 11.

[18] Pompeii gave its name to a special variety of onion, *Pompeiana cepa*; Columella (12.10.1) gives directions for preserving it.

[19] Pliny (*N.H.* 19.139-141) lists seven cabbages, one of which was the Pompeian cabbage: "The Pompeii cabbage is taller, and has a thin stalk near the root but grows thicker between the leaves, these being scantier and narrower, but their tenderness is a valuable quality. This cabbage cannot stand cold." Columella (10.135) also mentions the cabbage grown at Pompeii.

[20] See *AJA* 72 (1968) 72.

[21] Columella (3.13.3) suggests that rows be at least five feet apart if cultivated by hand, but Pliny (*N.H.* 17.171) says that in a rich area vines can be as close as four feet apart. This vineyard would of course have been hand cultivated as the contour of the land clearly shows.

The cavities in the upper garden, as well as those on the ramps leading to the lower garden, and at the rear of the lower garden, are more difficult to identify. They are either the cavities of tree roots, or of rather old grape roots. Perhaps there are some of both. We were surprised to find cavities on the steep sloping sides of the ramps, and we at first thought that some of the cavities might be those of posts, but most had laterals and were clearly roots. Near two of the cavities on the side of the E ramp we found chunks of badly corroded iron and bits of carbonized wood, probably the remains of garden tools.[22] All of these cavities were cleaned, measured, reinforced with wire, and filled with cement and casts made of them. The cavities varied greatly in size, the largest dimension at ground level ranging from 2 to 95 cm. The random way in which the roots were planted, and their varied size is duplicated in orchards in the area today, and suggests that our roots are probably those of trees. The trees in the modern orchards are usually small and planted close together. Counting the cavities found in the two vegetable gardens, there are 240 cavities in this garden that appear to be those of trees. It is perhaps instructive to compare the size of these cavities with the size of the tree cavities that we found in the large vineyard where, because of the precision of the planting pattern the tree cavities could be definitely identified:[23]

Largest dimension at ground level	Cavities in *Europa*	Tree cavities in vineyard
30 cm. or more	5	9
11 to 29 cm.	87	22
10 cm. or less	148	27
Total	240	58

The relative number of cavities in the last two categories is remarkably close, but there is a much larger percentage of large trees in the vineyard. This is consistent with what we have observed in the Pompeii area today. In orchards the trees tend to be smaller and more uniform in size, but in vineyards there are usually more large trees.

The largest cavity in the garden of the House of the Ship *Europa* was 95 cm. long at ground level, and had several lateral roots over 100 cm. in length. Dr. C. Fideghelli, of the Istituto Sperimentale per la Frutticoltura at Rome, who visited our excavations during the summer of 1974 and made many helpful observations regarding the identification of our casts, suggested that this root was probably that of an olive tree.[24] A strange root cavity in the upper garden, 59 cm. in length at ground level, looked much like that of a filbert tree whose suckers had been allowed to grow, such as are found in orchards in the area today.

A row of holes near the top of the E (pl. 81, fig. 7) and W walls at the S end of the garden and on the S wall where it is preserved on the E end, may indicate that a roof or frame had been built in those places to protect young trees planted on the ramp. Similar holes in the E and W walls of the large garden at the rear of the House of Loreius Tiburtinus (or D. Octavius Quartio) at II. v. 2 were explained by Spinazzola[25] as evidence of a roof for the protection of young or rare plants, i.e. a sort of a rudimentary hothouse. The plants would have been small, for Spinazzola's plan shows no root cavities, such as we have found in this garden. Frames are built today in the nearby Sorrento area to protect citrus trees.

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[22] There were few small finds in this garden other than the ever present loom weights, which we have found in every garden in which we have excavated so far. Of the eight in this garden, four were unbroken and had distinguishing designs on the top. An almost complete small terracotta lamp was found near the door at the SE corner of the garden; two fragments of small lamps were found in the backfill. A crude pottery bowl half-full of crushed lava, lying on the pile of crushed lava in the upper garden, appeared to have been used to scoop up the lava for making cement.

There were many amphorae piled in the NW corner of the upper garden, and fragments of broken amphorae were found throughout the garden. A beautiful large terracotta jar, in the partially excavated north room (ill. 1, entrance 6) of the little building off the SE corner of the garden, may have been found there, but there are no excavation reports for this garden, nor is there a list of finds. The three S rooms (ill. 1, entrance 5) of this building await excavation. They may contain the tools used in this garden. It has also been suggested that the two unusual terracotta frames inserted as windows in the garden wall of these rooms may indicate that these rooms were a commercial dovecote (pl. 81, fig. 7). The frames, however, appear to have been reused (the S one is broken on the left), and inserted on their side. Nor is there any projecting ledge on which birds might light, but ornithologists tell me that this would not be necessary. See V. Spinazzola, *Pompei alla luce degli scavi nuovi di Via dell' Abbondanza* (Rome 1953) 69, fig. 74 for three similar windows found at Pompeii, Priene, and Rome. Eschebach (supra n. 2) 121 identifies entrance 5 as a stable. Excavation of this building might contribute important information regarding the activities carried on in this property. See infra, section on Bones.

[23] *AJA* 77 (1973) 32. See ill. 2 for the location of the trees in the vineyard. One tree has been added to the total in this article.

[24] See infra n. 71.

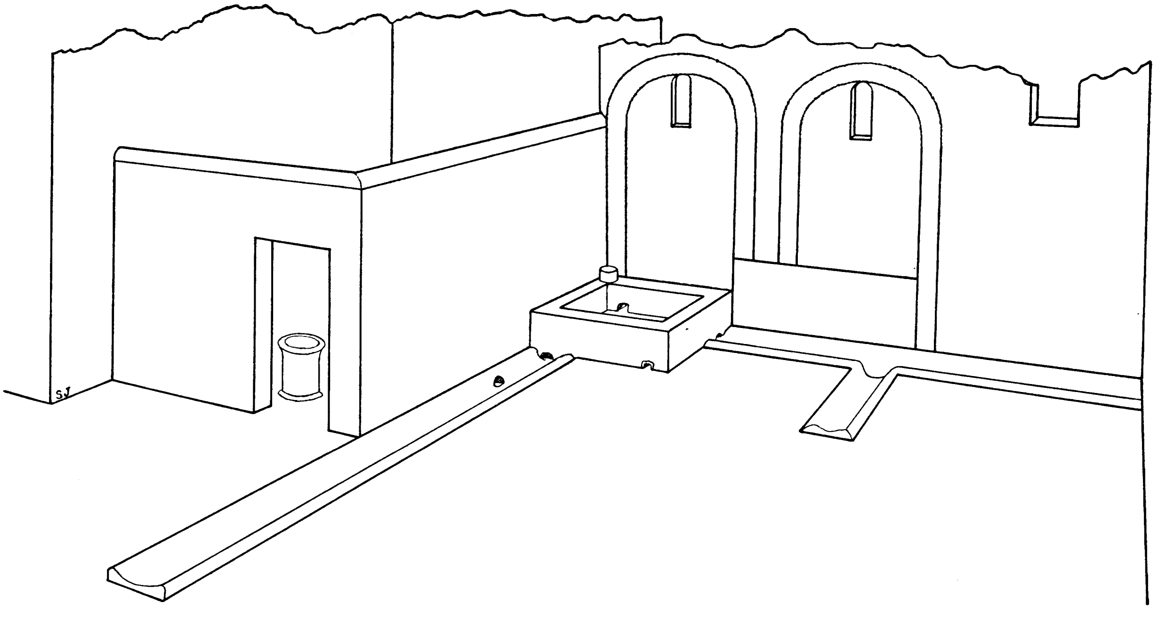
WATER SUPPLY

Two cisterns furnished water for the garden. The cistern located just inside the door leading to the garden from the E house was filled with water which fell from the roof at the E end of the house into a channel along the rear of the house. This channel, which sloped slightly toward the W, carried the water first into the square masonry basin at the corner of the house, and then into the cistern; an overflow channel led from the channel along the S of the house, to the garden. Roof water from the front of the house was conducted underground from the atrium to the masonry basin, and from there it could be channeled either to the cistern or directly to the garden, according to need. An opening at the E end of the S side of the basin directed water to the trees near the house (ill. 5). It was obvious, however, that the water flowing through the extended arm of the masonry channel was directed across the garden (even though parts of this area were destroyed by Fontana) to the edge of the upper garden where it fell down a well-worn gully to furnish water for the furrowed vegetable garden below (pl. 80, fig. 2) and then was channeled to the young vines and trees. Columella[26] describes water led down to a garden in this fashion:

> at your command let streams descend
> By sloping channels, and let thirsty earth
> Drink of the founts and fill the gaping mouths.

A second cistern was located at the W side of the upper garden (ill. 4). It appears to have been fed with roof water conducted underground from the peristyle of the House of the Ship *Europa*. There was also a cistern under the peristyle. The large rectangular basin at the rear of the house (ill. 4; pl. 81, fig. 4) had no provision for drainage, nor was it connected with any source of water. Similar basins are commonly found in gardens in the Pompeii area today.

The rainfall in the Pompeii area is barely adequate for vines and orchard trees.[27] Irrigation, such as is provided in this garden, is necessary for



ILL. 5. Drainage-channel of E house (I. xv. 1)

vegetable gardens, as well as for young trees and vines that are not quite established.

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[25] V. Spinazzola (supra n. 22) 411-12; plan on 417 with location of holes.

[26] *De re rustica* 10.48-49.

[27] See *AJA* 77 (1973) 37-38 for the importance of constant digging to conserve the moisture by dry farming techniques.

TERRACOTTA POTS

Among the important discoveries in this garden were the twenty-eight terracotta pots found embedded in the soil at varying depths, at intervals along the four walls. Eight of the pots were only slightly below the surface of the ground. Fourteen were found at the bottom of root cavities ranging in depth from 17 to 42 cm. A cluster of six appeared to be half pots. This is the first time that a large number of pots have been found in situ in a garden at Pompeii, or to my knowledge at any Italian site.[28] I immediately thought of the ten pots that Dorothy Burr Thompson found in the rock cuttings on the S side of the Hephaisteion in Athens, which she identified as pots used to make air layers,[29] in the way described by Cato[30] and Pliny.[31] I had previously found two pots at Pompeii; one found in 1966 in the House of the Hebrew (I. xi. 14), with base diameter approximately 7 x 7½ cm., had a large hole 4 cm. in diameter in the bottom, and four holes about 1½ cm. in diameter on the sides. The preserved height was 12 cm. In 1971 I found an almost complete smaller pot embedded in the soil near the N wall in the garden of the Triclinium with the Mosaic Fountains (II. ix. 7) to the W of the Palaestra. It has a base diameter of 5 cm., a hole in the bottom 3 cm. in diameter, and three small holes on the sides. It is 13 cm. high.

The pots found in the garden of the House of the Ship *Europa*, with one exception, have one hole in the bottom and three on the sides (pl. 82, fig. 8 and pl. 81, fig. 9). These pots (thirteen of which were sufficiently complete to be restored) all are of a coarse clay, and vary from red to black. The largest is 15.5 cm. high, with a base diameter of 6 cm., a mouth diameter of 10.5 cm., and a maximum diameter of 14.5 cm. The smallest is 13 cm. high, with a base diameter of 6 cm., a mouth diameter of 9.5 cm., and a maximum diameter of 10 cm. The pot with five holes is of different shape, fabric, and color. It is apparently a fragment of a small yellow clay amphora with a round base. The base is 7 cm. in diameter, the height (maximum preserved) is 18 cm., and the maximum preserved diameter is 13.5 cm.

The eight pots that were embedded only slightly below the surface of the earth, and the six half pots, which had been somewhat disturbed by the original excavators, were filled with soil. The other pots, or fragments of pots were found in cavities filled with lapilli. (See ill. 4 for the location of these pots.) The pots filled with soil had apparently been planted with seed, or a very small plant, for in these we found no root cavity filled with lapilli. Pots embedded in the soil would of course better conserve moisture.

The references to pots in the ancient sources are extremely rare. Pliny recommends planting pine nuts in pots with holes.[32] In another passage (17. 97) he says that when a branch is bent down from a tree and rooted, if the rooted layer is to be carried a considerable distance before it is replanted, it should first be planted in a basket or earthenware pot. There are also the two previously mentioned passages in which Cato and Pliny suggest using pots or baskets for making air layers. Dr. Fideghelli suggested that our pots might have been used for air layering. The Romans knew various means of propagating trees: seeds, cuttings, layers, and grafted stock. They realized that seedlings were often of inferior quality. The grafting of choice varieties on mature under-stocks grown from seed produces trees that bear when they are much smaller. It is quite possible that in this garden under-stocks to be grafted were grown from seed in pots. Or our proprietor may have bought grafted tree from a nursery where the root stock had been started in a pot so that the tree could be easily transported.

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[28] The only mention of pots found heretofore at Pompeii, that I have been able to locate, is the reference to those found by the gardener Roncicchi in the peristyle of the House of the Centenary (IX. viii. 6). R. Paribeni (*NS* 1902, 567) says that this was the first time that such pots had been found. But he unfortunately gives neither the number of pots found nor their size. Nor have I been able to locate them. He describes them as having the form of an *urceus* with a swelled paunch, drawn in at the bottom. About one-third of the way up on the sides they had three holes, equidistant from each other, made in the clay either with a stick or a finger before firing; there was also a hole in the bottom, all according to Paribeni, for drainage.

In 1972 I saw similar pots that had been recently excavated in the villa at Torre Annunziata. They were found in quite a different context. Space in a small peristyle was almost completely filled by a round construction with a jet in the center and bordered by a shallow "planter" in which the pots were found. Here the pots were obviously for flowers. John W. Hayes has told me of similar pots that he found in 1963 at a kiln-site at Prima Porta which was hurriedly excavated by the British School at Rome when it was exposed briefly during road-works. Fragments of six pots were found. One had remains of three holes in one side and one at the bottom, and he tells me that another could be similar. Another type apparently had no holes in the sides. All were an orange ware with some dark volcanic specks. Associated finds show that the kiln was active around or just after the mid-first century A.D.

[29] Dorothy Burr Thompson, "The Garden of Hephaistos," *Hesperia* 6 (1937) 396-425. Ten pots were nearly complete; fragments were found in another cutting. The pots were all, with one exception, similar in style and fabric. Their height varies from 17-21 cm., the diameter of the rim from 23-25 cm. "They were all roughly cut off the wheel with a string. . . . The fabric of all the pots is thin and hard-baked; wheel marks show as grooves. The lip is sometimes thickened indiscriminately toward the inside or outside. A thin gray slip covers the surface. The firing gave a variety of colors to the slip, which vary from red to buff to bluish-gray. The core usually burned gray" (p. 406). Mrs. Thompson dates the replanting of this garden more than two decades after its destruction by Sulla in 86 B.C., i.e. some time early in the first century A.D. (p. 411).

[30] *De agri cultura* 52 (repeated in 132).

[31] *N.H.* 17.97-98.

[32] *N.H.* 17.64.

As White points out, grafting "made it easy to establish new varieties, and the conquest of the eastern Mediterranean, which brought increasing contact with distant lands, led to the introduction both of new varieties, of well-known fruits, and of fruits which were previously unknown to Italy. . . . This advance reached a peak towards the end of the first century A.D."[33] Pliny gives us a detailed account of the various fruit and nut trees recently introduced into Italy. Among those mentioned are the cherry which was brought back by Lucullus after his wars in the East; the peach known as the *malum Persicum*; the apricot known as the *prunus Armeniaca*; and the pistachio which was brought into Italy by Vitellius from Syria where he served during the reign of Tiberius.

Pliny also tells us that "various nations have tried to acclimatize the citron in their own countries, importing it in earthenware pots provided with breathing holes for the roots."[34] This sounds like a description of our Pompeian pots, with their several holes. Is it possible that in this garden we also have exotic plants, such as the citron, which were imported in pots? Perhaps the Ship *Europa* did reflect the commercial activity of the owner. As we have seen, citrus fruit often requires protection from frost in the Pompeii area today. This may explain the presence of protecting roofs or frames in this garden. According to Pliny, it was because of its great medicinal value that the citron was imported, but it was also used to protect stored garments from being injured by insects, and as a mouth wash. Its fruit was not eaten.[35] The citron was also in great demand among the Jews in antiquity, as it still is today, for ceremonial purposes; at the Feast of the Tabernacles (Sukkoth) the Jews carried a bouquet of myrtle, willow, palm, and the citron.[36] It may be significant that a pot with five holes was found in the garden of the nearby House of the Hebrew (I. xi. 14), thought to be the gathering place of the Jewish community at Pompeii.

The modern Pompeian frequently does his own grafting, removing buds from a choice tree, and grafting them on under-stocks, using methods recommended by the ancient agricultural writers.[37] Or he may buy a grafted tree in a pot, first removing the pot before he plants the tree. It was with great excitement that we discovered pots with multiple holes in a modern nursery supply store at Pompeii during the summer of 1973. We were told that these pots were used for growing grafted trees and shrubs. The ancient pots which were narrower at the top could not have been removed like modern straight-sided pots, but they appear to have been broken before the plant was put in the soil. Cavities in which only fragments of a pot are found would seem to indicate that, in these instances, when the pot was broken, some of the pieces fell from the plant and were not put in the planting hole.

The depth at which some of the pots were found is difficult to explain, but in these locations we did find root cavities. Specialists have suggested to me that perhaps these pots held varieties that were stem-rooting. The pots in the Garden of Hephaistos were planted at an even greater depth.[38]

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[33] K.D. White, *Roman Farming* (Ithaca 1970) 258. See Table, Appendix A, 262.

[34] For the cherry see Pliny *N.H.* 15.102; for the peach *N.H.* 15.39; for the apricot *N.H.* 15.40, 41; for the pistachio *N.H.* 15.91; for the citron *N.H.* 12.16.

[35] Pliny *N.H.* 12.16; 23.105.

[36] Josephus, *Jewish Antiquities* 3.245; 13.372. The "fruit of goodly trees" in Leviticus 23. 39-40 was interpreted by the Rabbis as referring to the citron (the *ethrog* in Hebrew). Pliny (*N.H.* 12.16) says that the citron refused to grow except in Media and Persia, but according to S. Tolkowsky (*Hesperides, A History of the Culture and Use of Citrus Fruits* [London 1938] 323): "Of all citrus species, the citron was the first to reach the Mediterranean world, during the century following Alexander the Great's conquest of western Asia; its culture spread rapidly throughout the Levant, northern Africa, Greece and Italy chiefly owing to its inclusion into Jewish ritual toward the middle of the second century B.C."

[37] The ancient manuals give detailed instructions for several methods of grafting: Cato *De agri cultura* 40-42; Varro *De re rustica* 1.40.5-41.3; Columella *De arboribus* 8-9 (instructions for grafting vines), 26-27 (grafting trees). See White (supra n. 30) 248, 257-58 for a discussion of the various grafting techniques used by the ancient Romans.

[38] Thompson (supra n. 29) 417. The tops of the pots were 30-50 cm. below the ancient ground level. Above the pots, the

PLANT MATERIAL

We have other important evidence that may further help us identify what was grown in this garden. We were especially fortunate to find considerable carbonized plant material. Carbonized fruit and vegetables have been found in shops and in homes, in various containers, at both Pompeii[39] and Herculaneum,[40] but it is unusual to find carbonized fruits, nuts, and vegetables preserved in a garden.[41] The carbonized material found in this garden was identified by Dr. Frederick G. Meyer, of the U.S. National Arboretum. In the upper garden there were pieces of filbert shells, easily identifiable by the broad hilum or seed scar (pl. 82, fig. 10), and the characteristic striations; and a piece of a carbonized fig. There were also perfectly preserved grapes (pl. 82, fig. 11), caramelized because of their high sugar content, which gave them a glassy appearance, so that even the smallest fragment could be easily spotted. We even found grape seeds, easily identified by their characteristic bottleshape, and prominent chalaza (round spot where the seed is attached) (pl. 82, fig. 12).

In the east plot of the furrowed vegetable garden on the N end of the lower garden, there were four fragments of a carbonized fruit or nut not yet identified and a fragment of a carbonized almond, with characteristic perforated surfaces. It is quite possible that the small trees in the vegetable plots were almonds. Dr. McCay tells me that the size, spacing, and the location of the root cavities along the W wall, where the carbonized fig was found, were appropriate for almond trees, or for cherries, plums, olives, peaches, or figs. All of these could easily have been grafted on stocks started in pots.

The discovery of a date seed, with a portion of the edible fruit which was also caramelized still adhering (pl. 82, fig. 13), was more surprising, for dates do not mature at Pompeii. It must have come from the gardener's lunch. Carbonized dates have been found in the shops, so we know that the Pompeians imported them. Fragments of burned dates were also found along with the remains of other offerings in the two pits containing the refuse from sacrifices at the Temple of Isis.[42] Perhaps our proprietor, in addition to the nuts and fruits raised in his garden, also sold imported dates in his shop by the front entrance. Again the Ship *Europa* may have some meaning.

The large number of broad beans or horse beans (*Vicia faba* L. var. minor [Peterm. & Harz] Beck), found in various places in this garden, strongly suggests intercultivation among the vines and trees, which is practiced extensively in the Pompeii area today. The characteristic hilum (seed scar) of the ancient broad bean at the apex of the seed makes positive identification possible (pl. 82, fig. 14). In ordinary garden beans and peas the hilum is on the side. From the hole of one of the ancient beans, entomologists at the Smithsonian Institution, with tiny tweezers extracted the hind leg of a bruchid, or strawberry weevil. From another they extracted a large part of a bruchid. The ancient Pompeian gardener apparently did not take too seriously the warning of Pliny who advised against planting the bean (*faba*) and all sorts of garden vegetables including the radish and the cabbage near grape-

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entire cutting was filled with light yellow earth. See fig. 12, p. 416.

[39] Carbonized "figs, chestnuts, plums, grapes, fruit in glass vessels, lentils, grain" etc. were found in shops on the Strada degli Augustali at Pompeii, but the reports do not say if these shops belonged to the Macellum or were on the opposite side of the street (Mau, *Pompeii, its Life and Art*, London 1907, 96). Among the many dolia found embedded in a large room, in the covered portico, and in the cortile of the maritime warehouse of M. Cellius Africanus, near the ancient port of Pompeii, was a dolium filled with olives, another with pine cones. See F. Fienga, "Esplorazione del pago marittino pompeiano," *Atti III Congresso Nazionale di Studi Romani* 1 (1934) 175.

The carbonized materials found in the early excavations were carefully studied by the German botanist, L. Wittmack ("Die in Pompeji gefundenen pflanzlichen Reste," *Beiblatt zu den Botanischen Jahrbüchern*, No. 73 [1903] 38-63). Unfortunately much of the carbonized material that Wittmack described can no longer be located. Dr. Frederick G. Meyer is now studying and preparing for publication all the carbonized fruits, nuts, grains and seeds that have been found since Wittmack wrote. This study will include some unpublished carbonized material in the Deposito at Pompeii.

[40] A. Maiuri, *Ercolano—I nuovi scavi 1927-1958* (Rome 1959) reports various finds of carbonized fruits and vegetables at Herculaneum: figs and legumes in a cupboard in the Casa d'Argo *insula* II.2 (p. 361); nuts in a dolium half-buried in the ground in Shop IV.17 (p. 437); beans and chick-peas (?) in dolia in counter in Shop V. 6 (p. 402); beans and chick-peas in containers in counter in Shop in *insula orientalis* II. 13. For a cup of pine-nuts in the Casa dell'atrio Corintio V. 30 see Maiuri, *Herculaneum* ("Guidebooks to Museums and Monuments in Italy"; 3rd ed. 1945) 51.

A considerable amount of unpublished carbonized material in the Deposito at Herculaneum includes various legumes, grains, fruits and nuts, much of this from the 1961 excavations of the shops along the Decumanus Maximus. This material will also be included in the comprehensive study of Dr. Meyer.

[41] In 1970 we found two carbonized olives in the large vineyard at II. v. See *AJA* 77 (1973) 32-33 and pl. 3, fig. 6.

[42] Mau (supra n. 39) 175.

vines, which he claims have a sense of smell, and are made sickly and ailing by certain plants. He also warns against planting the filbert (*corylus*) near grapevines,[43] a warning repeated by Vergil,[44] but certainly not heeded by vinegrowers in the Pompeii area today,[45] any more than it was in antiquity.

The many amphorae found in this house and garden could easily have been used to package the produce raised and sold there. Liquids were not the only items put in amphorae. Labels written on amphorae found at Pompeii list such contents as cherries,[46] *lomentum* (bean meal),[47] olives,[48] nuts,[49] chick peas in lard,[50] and perhaps lupines.[51] The two basins in the room off the peristyle may have been used to wash amphorae before reuse.[52] Two were reportedly found in the basins. The dolia in the peristyle may also have been containers for produce raised in the garden.

CARBONIZED WOOD

We found bits of carbonized wood in a few areas which still had a thin covering of the original lapilli, and occasionally when emptying the lapilli from a root cavity we came upon a small piece of carbonized root. These fragments were all carefully retrieved, for it is often possible to identify the plant from a piece of charcoal as small as 0.3 cm. in diameter. Sometimes charcoal fragments can be sectioned and identified under low-power magnification. A recently developed technique, however, makes it possible to embed the charcoal in a resin, and "prepare thin sections suitable for examination at greater magnification."[53] A small charcoal fragment found in a root cavity in the vineyard in the lower garden (the fourth cavity from the S in the first row to the E of the path) has been identified as filbert (*Corylus*).[54] But it should not be surprising to find trees in a vineyard. In the large vineyard (II.v) we found trees located along the path, at the edges of the vineyard, and scattered throughout the vineyard.[55] The modern Pompeian plants trees in his vineyard in exactly the same way. And as we have seen, he too plants the filbert tree, against which Pliny and Vergil expressly warn. A fragment of charcoal identified as plane tree (*Platanus*) was found near the smaller of the two large tree cavities in the SE corner of the lower garden near the door. A small scrap of charcoal from the upper garden has been identified as oak (*Quercus*), but the wood may have come from a stake or a tool.

POLLEN

But the most exciting of our discoveries in the summer of 1972, was the discovery of ancient pollen. It is well known that ancient pollen is preserved and can be recovered from neolithic peatbogs and lake beds, but historic sites have not yielded significant results because of the ease of contamination in such sites, and the fact that pollen exposed to the air is easily destroyed.[56] Pollen is preserved, however, in acid soil, and the volcanic soil at Pompeii is acid. Then too, it seemed to me that there was a good chance that the thick covering of lapilli might have preserved the ancient pollen and protected it from contamination. Heat destroys pollen, but the volcanic ash, by the time that it reached Pompeii, was not as hot as is commonly thought. Although pollen experts consistently told me that they thought that it would be impossible to find ancient pollen at Pompeii, it seemed to me that we should leave no possible method of acquiring additional information about the ancient plant material unexplored. We carefully collected clean soil samples from two gardens. These were sent to Prof. G.W. Dimbleby, of the Institute of Archaeology, at the University of London, who had generously agreed to test the samples for us. In due time the report came that he had found pollen! The process of testing for pollen is a long and tedious one, involving many different steps of dry-ing, grinding, simmering, centrifuging, washing, boiling, repeated again and again.[57] Then comes the difficult problem of identification.[58]

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[43] Pliny *N.H.* 17. 240.

[44] Vergil *Georgics* 2. 299.

[45] *AJA* 74 (1970) 66.

[46] *CIL* 4. 2562 (amphora style IV).

[47] *CIL* 4. 2597 (small amphora style II).

[48] *CIL* 4. 2610 (small amphora style I); 4.5598 (style of container not given); 4.9437 (style XXVI). According to M. Della Corte (*NS* 1958, 163) the many amphorae labeled with the ligature *STR* contained hand-picked olives: (*oliva*) *stricta* (or *destricta*). These were considered much superior to those shaken from the tree (Varro *De re rustica* 1.55; Cato *De agri cultura* 65; Columella *De re rustica* 12. 50. 1).

[49] *CIL* 4. 5761 (small amphora style I).

[50] *CIL* 4.5729 (amphora style XII).

[51] *CIL* 4.9420 (amphora style XI).

[52] Amphorae frequently have two labels, showing that they were reused. *CIL* 4.5598 was first used for olives, and later reused for wine.

[53] See Geoffrey W. Dimbleby, *Plants and Archaeology*, London 1967, 112-13.

[54] Letter from Joan Sheldon April 4, 1974.

[55] *AJA* 77 (1973) 32 and ill. 2.

[56] See Geoffrey W. Dimbleby (supra n. 53) ch. 9, "Pollen and Spores" 117-30.

Twenty-five different pollens and three different fern spores have been identified thus far from our samples. Most surprising was the large concentration of olive in an adjacent garden (II. viii. 6), which makes it almost certain that olives were raised there.[59] Smaller amounts of some pollens, such as chestnut, may have been wind blown from other gardens.[60]

The covering of original lapilli in the garden of the House of the Ship *Europa* was so thin that it was possible to take only two soil samples. Ancient pollen was found in both samples, but the pollen count was lower than in our other samples.[61] These pollens are in the process of being identified and interpreted, and will be reported on later.

The unique conditions at Pompeii make possible the recovery of ancient pollen: a thick covering of lapilli, which was fortunately sufficiently cooled by the time it reached Pompeii, protected from contamination and destruction the pollen which was preserved in the acid volcanic soil. The discovery of ancient pollen at Pompeii opens up an entirely new aspect of the study of ancient gardens.

BONES

Twenty-one bones and twenty teeth, representing five species, were found in the course of our excavation of this garden. These were identified as follows: *Canis familiaris* (dog) 7 bones;[62] *Sus scrofa* (pig), 7 bones[63] and 8 teeth; *Bos taurus* (cow) 2 bones;[64] *Ovis aries* (sheep) 3;[65] *Gallus gallus* (chicken) 1;[66] and one bone too fragmentary to identify. We have no way of knowing how many bones were removed when most of the fill was trucked away at the time of original excavation. It seems likely that the dog was a watch dog or a pet. The two femurs, which are from the same dog, indicate that it was about 45 cm. high at the shoulder. The other bones may be those of domestic animals that were trapped in the garden by the falling lapilli. It is possible that animals may have been kept in part of the building in the SE corner of the *insula*, for it was not unusual to find animals within the city. The skeletons of two cows were found in a stall in the palatial House of the Faun (VI. xii).[67] It is also quite likely that at least some of the bones may have been discards from meals. There were no tool marks, however, on any of the bones, indicating that they had been split for marrow, such as we found in the large vineyard (II. V),[68] nor was there a triclinium in this garden. But it seems to have been quite usual to discard bones in the garden after a meal. It may be significant that the pig bones were found near the house, the dog, cow and sheep bones in the lower garden, but too much can not be made of this since some of the bones were found in backfill.

IN CONCLUSION

Prof. John Day in his well known study of the *villae rusticae* in the Pompeii area observed that they had little space for raising fruit and vegetables, and suggested that there must have been many "small truck gardens in the vicinity of the city."[69] For the first time such a garden has been found. Modern gardens adjacent to the city continue the same planting pattern. Furrowed vegetable gardens are found adjacent to orchard trees, just as in our garden, and often a small vineyard, frequently for table grapes, is found nearby. Young trees grafted by the owner bear citrus fruits, filberts, peaches, figs, and plums. Small trees planted underneath larger trees are ready for replacement as soon as the older trees cease to be productive.[70] Our pollen tests as well as our discovery of carbonized olives in II. v have shown that the olive was also at home in ancient Pompeian gardens.[71] It is no longer necessary to banish the olive to more distant places along the coast, nor the chestnut to the Lattari Mountains.[72]

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[57] G.W. Dimbleby, "Soil Pollen Analysis," *Journal of Soil Science* 12 (1961) 11.

[58] Dimbleby (supra n. 53) 117: "The identification of pollen grains can rarely be absolutely specific, unlike that of seeds and fruits. Usually it is possible to ascribe a pollen grain to its family, quite often to a genus, but only exceptionally to species. Of course, where there is only one native species in a genus we may make a reasonably safe guess." Prof. Dimbleby also points out (p. 130) that for pollen analysis to be successful a reference collection of the pollen grains of the specific area must be available.

[59] Letter from Prof. Dimbleby September 12, 1972.

[60] Ibid.

[61] Letter from Prof. Dimbleby March 20, 1974.

[62] *Canis familiaris*, tibia, femur, femur (distal end fragment), costa, radius, mandible, phalange.

[63] *Sus scrofa*, pelvis, mandible (two fragments of the same bone). The classification *Sus scrofa* is used for both the domestic pig and the wild boar. Their bones cannot be distinguished, but at birth the two animals are very different. The wild boar has striped young; the domestic pig never does. It is interesting that the louse on the domestic pig is the same as the one on the pig in SE Asia, but the louse on the wild boar is a different one. Because the bones in this garden came from a young animal they were identified by Dr. Setzer as domestic pig.

[64] *Bos taurus*, vertebra, calcaneum.

[65] *Ovis aries*, metapodial, right mandible, maxilla, 12 teeth.

[66] *Gallus gallus*, tarsometatarsus.

[67] *NS* (1900) 31.

[68] *AJA* 77 (1973) 38-39.

[69] John Day, "Agriculture in the Life of Pompeii," *Yale Classical Studies* 3 (1932) 189.

The results of our 1972 season make it possible to give a detailed description of an ancient market-garden orchard, the first such ever found. This garden is an important one. The perfect preservation of the contour of the soil in much of the garden, the complicated planting pattern, the conditions of planting, and the use of four-holed terracotta pots, the remarkable preservation of many varieties of carbonized plant material, and the recovery of ancient pollen combine to give us a unique picture of ancient agriculture. The fact that this large, intensively cultivated garden, which occupies most of an *insula*, was found within the city walls, also adds further important evidence for the study of ancient land use and city planning.

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[70] Giovanni Campo pointed out examples of this practice in his orchard adjacent to the ancient city, just outside the Stabian Gate. A one year old lemon tree, with a circumference of 10 cm. at ground level, grew just a few cm. from a five year old pear tree, with a circumference of 26 cm. In a few years, after the lemon is well started and bearing, the pear will be cut. Pears usually last ten to twelve years; lemons last twenty-five to thirty years.

[71] See supra n. 41. The cavity of the tree root beside which we found the two carbonized olives in the large vineyard (II. v) was 6 x 8 cm. The olive tree is rarely found at Pompeii today. The only ones that I have seen are the two in Campo's orchard, which are five years old and have trunks approximately 14 cm. in circumference at ground level (4.5 cm. in diameter), two in replanted gardens in the excavations at VIII. iii. 14 and VIII. vi. 5, and some fine old olive trees that grace the grounds of the Pontificio Seminario di Bartolo Longo to the S of the State Railway Station at Pompeii.

[72] *AJA* (1970) 65.

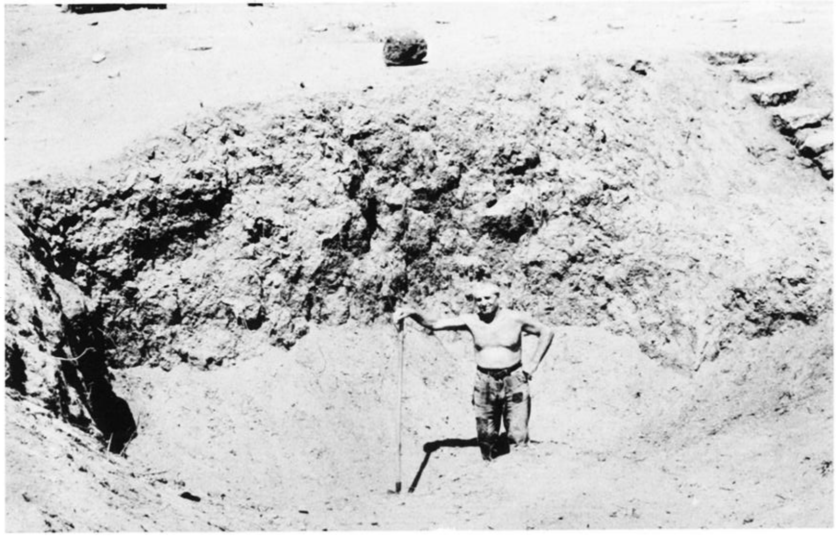

Fig. 1. Large hole in lower garden

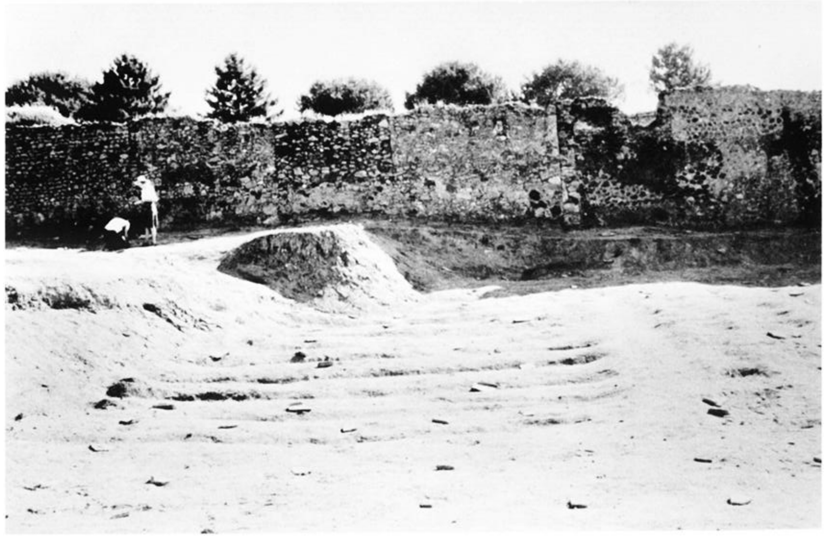

Fig. 2. Vegetable garden (N end of lower garden)

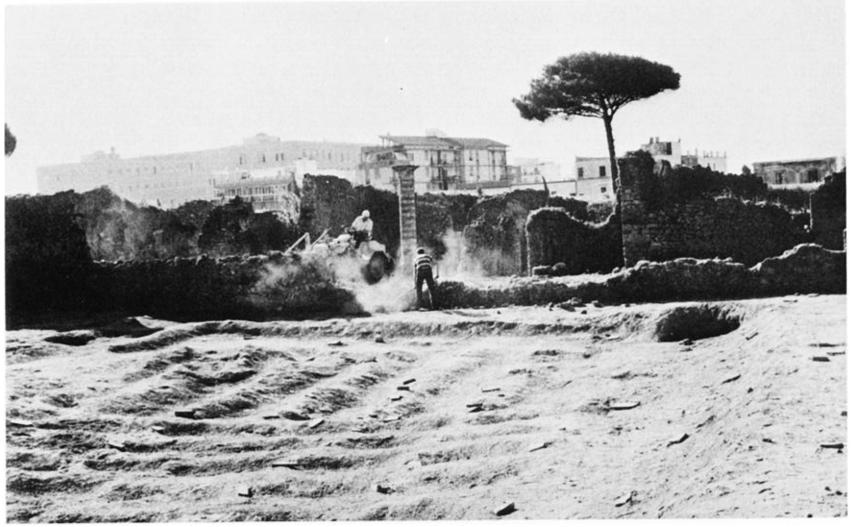

Fig. 3. Vegetable garden (SW part of lower garden)

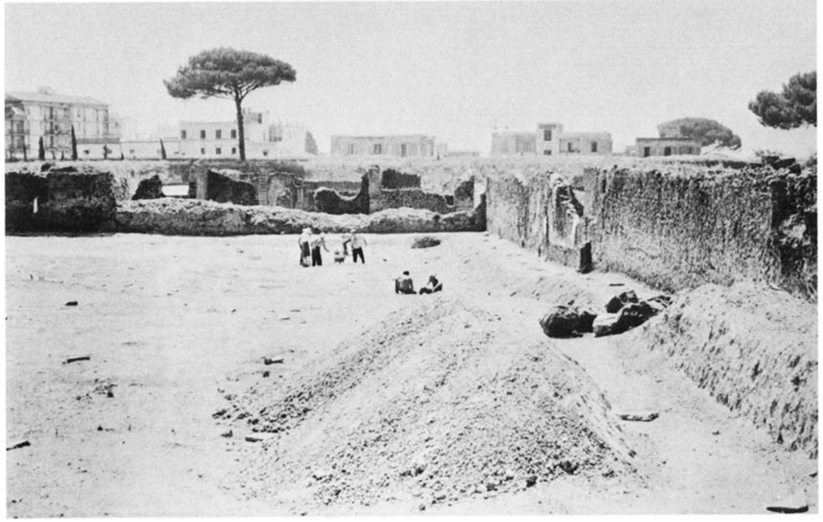

Fig. 6. Pile of crushed lava in upper garden.
SW part of garden at rear; W ramp

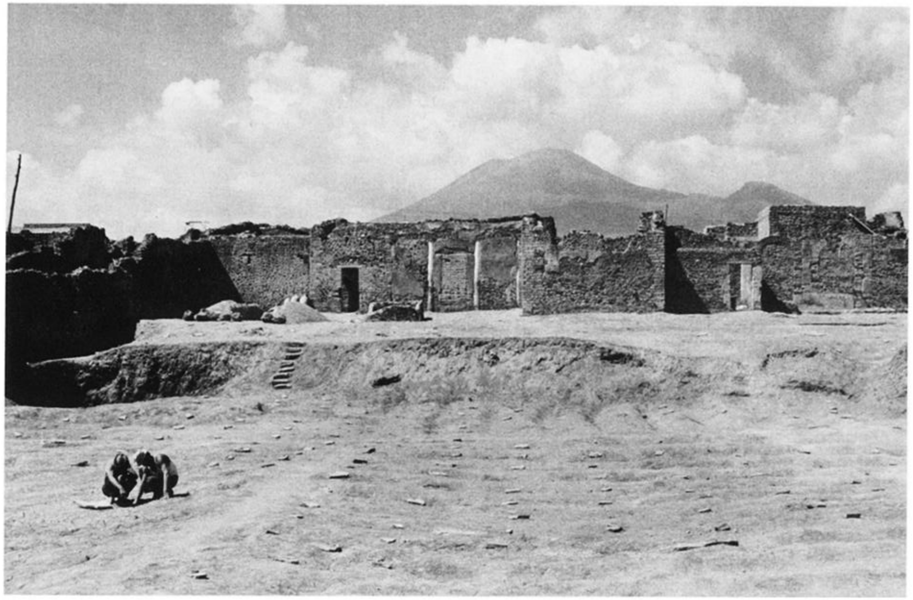

FIG. 4. Garden of the House of the Ship *Europa* (toward N)

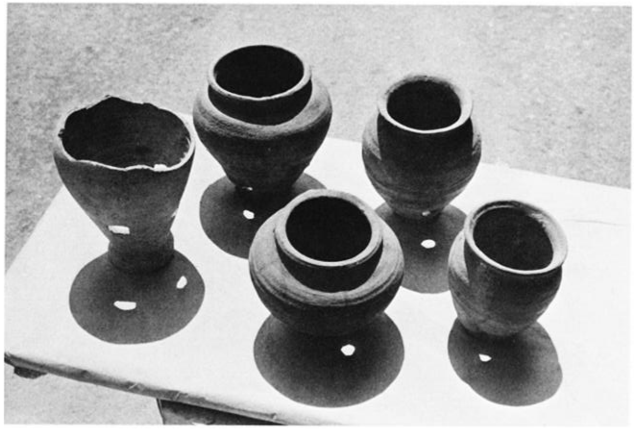

FIG. 9. Restored terracotta pots. Pot on left has five holes

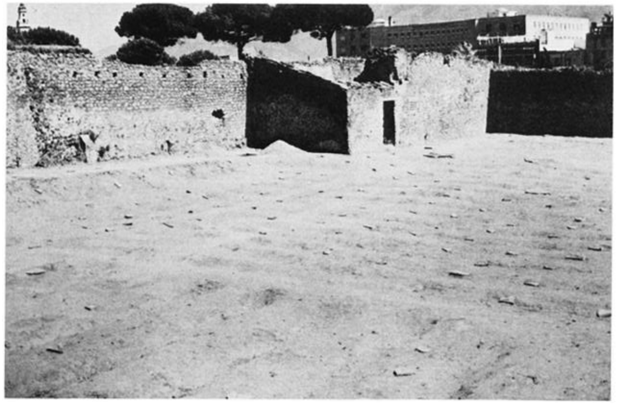

FIG. 7. SE part of garden; E ramp

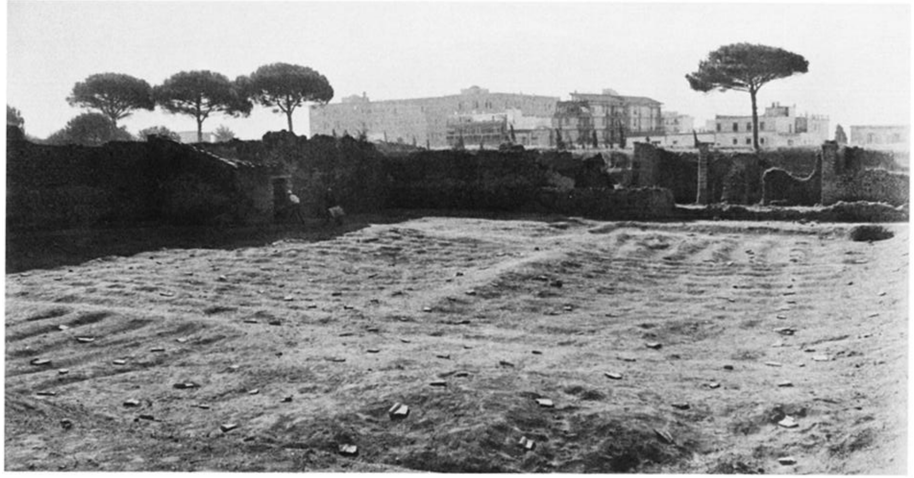

FIG. 5. Garden of the House of the Ship *Europa* (toward S)

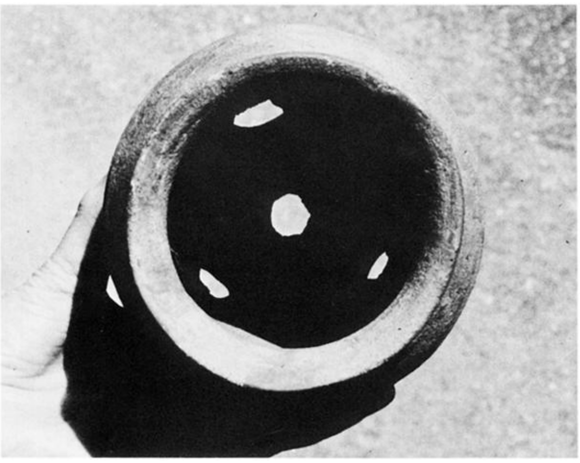

FIG. 8. Restored terracotta pot with four holes

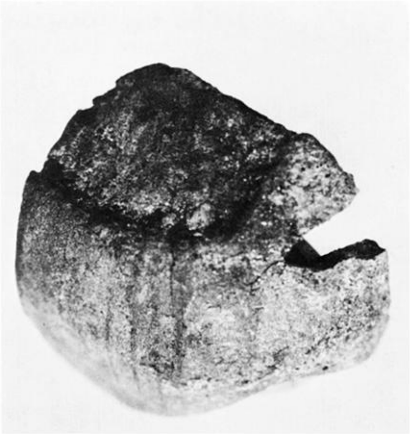

FIG. 10. Filbert, *Corylus avellana* L. (10 x 12 mm.) found in garden

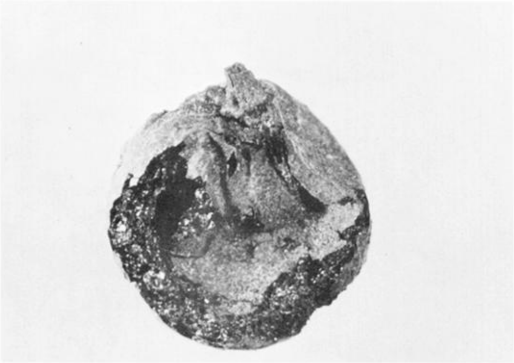

FIG. 11. Grape, *Vitis vinifera* L. (diam. 10 mm.) found in garden

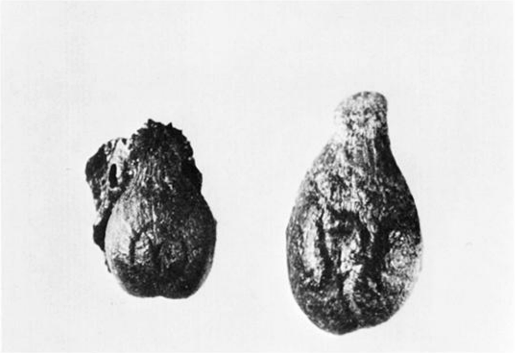

FIG. 12. Grape seed, *Vitis vinifera* L. Left: (3 x 5.5 mm.) found in garden. Right: (3.5 x 7) from U.S. Department of Agriculture Seed Collection at Beltsville, Md.

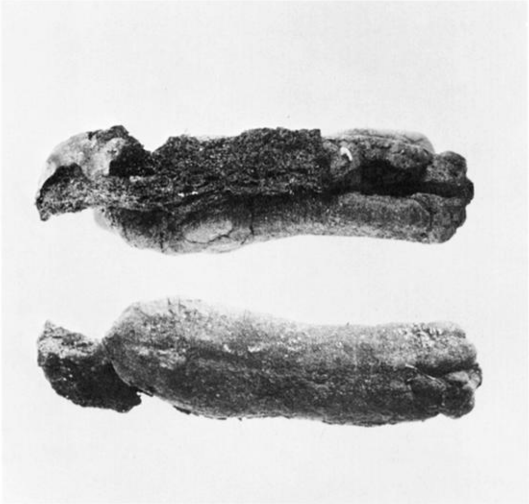

FIG. 13. Date seed, *Phoenix dactylifera* L. with portion of edible fruit (7 x 30 mm.) found in garden

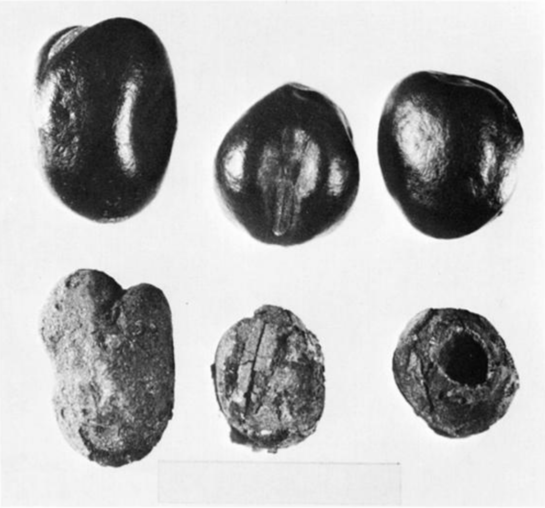

FIG. 14. Broadbean or Horsebean, *Vicia faba* L. var. minor (Peterm. & Harz) Beck. Top: (7-10 mm. long x 6-7 mm. wide) from U.S. Department of Agriculture Seed Collection, Beltsville, Md. Bottom: (6-9 mm. long x 5-7 mm. wide) found in garden. Hind leg of bruchid found in bean on right

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The Excavation of a Shop-House Garden at Pompeii (I. xx. 5)*

WILHELMINA F. JASHEMSKI

The shop-houses of the humble people who made up a large part of the population at Pompeii have been little noticed, over-shadowed as they are by the more aristocratic and much studied atrium-peristyle houses. It is now generally recognized that Pompeii was a busy commercial town and not the resort town and playground of the wealthy Romans that earlier writers believed it to be. The many shops and workshops at Pompeii are found scattered throughout the town, for the residential and business sections were not rigidly separated. In many cases the shop was simply a large room, which was open to the street when the shutters were pushed back. Frequently there was a counter facing the street, especially in food shops, so that passers-by might be served without the need to enter the shop. Livy's description of everyday life as Camillus found it in Tusculum could easily be used to describe Pompeii. When Camillus entered the town he found "the shops with their shutters off and all their wares exposed, the craftsmen busy with their respective trades, the schools buzzing with the voices of scholars,[1] crowds in the street."[2] Many shops were both places of business and of residence, having one or more rooms at the rear or above the shop, in which the shopkeeper and his family lived. At other times the second story rooms were a separate dwelling reached by a flight of stairs from the street.[3]

THE SHOP-HOUSE

This shop, with living quarters above, is located in Region I, insula xx, the first *insula* to the left upon entering the city through the Nucerian Gate. It is one of the many properties excavated all or in part in the southeast part of Pompeii during the last period of extensive excavation from 1951 to 1961. There are no excavation reports, but entries in the Inventory Books, which list objects deposited in the Antiquarium or in a deposito at Pompeii, fix the approximate time of excavation as 1958-1959.[4]

The shop does not front on the busy Via Nuceria which brought traffic into the city from the port, but opened more advantageously on the wide street along the north side of the *insula* (ill. 1 and figs. 1 and 2). There were two rear rooms in the shop; stairs in the southeast corner of the second room gave access to the quarters above. Waste-pipes visible in the wall fronting on the Via Nuceria[5] indicate that the upstairs rooms served as the habitation

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* Funds for the excavations were provided by the National Endowment for the Humanities and the General Research Board of the University of Maryland. Trucks, additional workmen, and other valuable assistance were provided by the authorities at Pompeii. All photographs (except fig. 2 by the Julian Whittlesey Foundation), statistical studies, the plan and the drawing of the garden are by Stanley A. Jashemski.

The excavation of this garden, which was begun during our 1971 season and completed in 1972, was greatly facilitated by the generous cooperation and gracious hospitality of Professor Alfonso de Franciscis, Superintendent of Antiquities for the Province of Naples and Caserta, and of Dr. Giuseppina Cerulli Irelli, Director of the Excavations at Pompeii, who again generously made available the facilities at Pompeii. Domenico Pelli, chief assistant at Pompeii, also gave valuable help and advice. Nicola Sicigano was again our able foreman. Gratitude is also expressed to Dr. C. Fideghelli of the Istituto di Frutticoltura, Ministero dell'Agricoltura at Rome, who visited our excavations and shared with us his detailed knowledge regarding the culture of fruit trees in Campania; to Dr. John R. McGrew, Research Plant Pathologist, U.S. Department of Agriculture, Plant Science Research Division, Beltsville, Md., for advice on matters pertaining to viticulture; and to Dr. Henry Setzer, Mammologist in charge of the African Section at the Smithsonian Institution, who identified the bones found in our excavations.

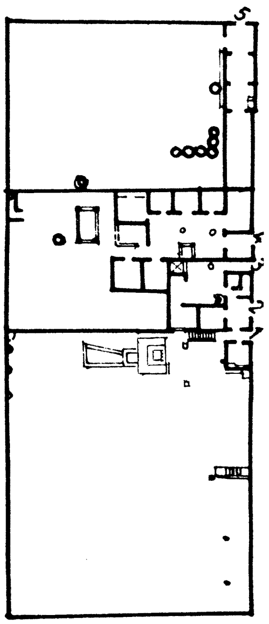
[1] For two schools located in shops at Pompeii (at IX. viii. 2 and VII. xii. 14) see M. Della Corte, "La scuola di Epicuro in alcune pitture pompeiane," *Studi Romani* 7 (1959) 129-45, and "Scuole e maestri in Pompei antica," *Studi Romani* 7 (1959) 624-26.

[2] Livy 6.25.8-9.

[3] James E. Packer, *The Insulae of Imperial Ostia* (*MAAR* 31 [Rome 1971]) in chapter III, in which he describes the origins of the Ostian multiple dwelling, gives a useful survey of the Campanian evidence. A topographical survey of Region VI at Pompeii shows the presence of various irregular dwellings and shop-houses. These are discussed in his article "Middle and Lower Class Housing in Pompeii and Herculaneum," *Neue Forschungen in Pompeji* (Essen 1974) 133-46.

[4] See below under Small Finds. This shop-house, now I. xx. 5, is called I. xv. 5 in the Inventory Books.

[5] Exploratory excavations in 1973 showed that these pipes emptied into a sewer drain under the Via Nuceria.



ILL. 1

of the shop-keeper and his family. At the back of the shop was a large storeroom with a *dolium* embedded in the ground (ill. 2).[6] No other furnishings remain to suggest what might have been sold or produced in this shop, nor did Della Corte find any graffiti here, such as have occasionally been helpful in identifying other shops.

Adjacent to the shop was a large open area of unknown use, entered through a door on the west side of the shop. The entire property was enclosed by walls as is customary at Pompeii. The south wall was a party wall shared with the adjacent house and garden. The third property in the insula was the so-called "Inn of the Gladiator"[7] (I. xx. 1) and the adjoining shop and lamp factory[8] (I. xx. 2-3; see ill. 1).

THE FASCINUM

The north wall of the large open area adjacent to the shop-house presented an unusual appearance with broken amphorae set all along the top of the

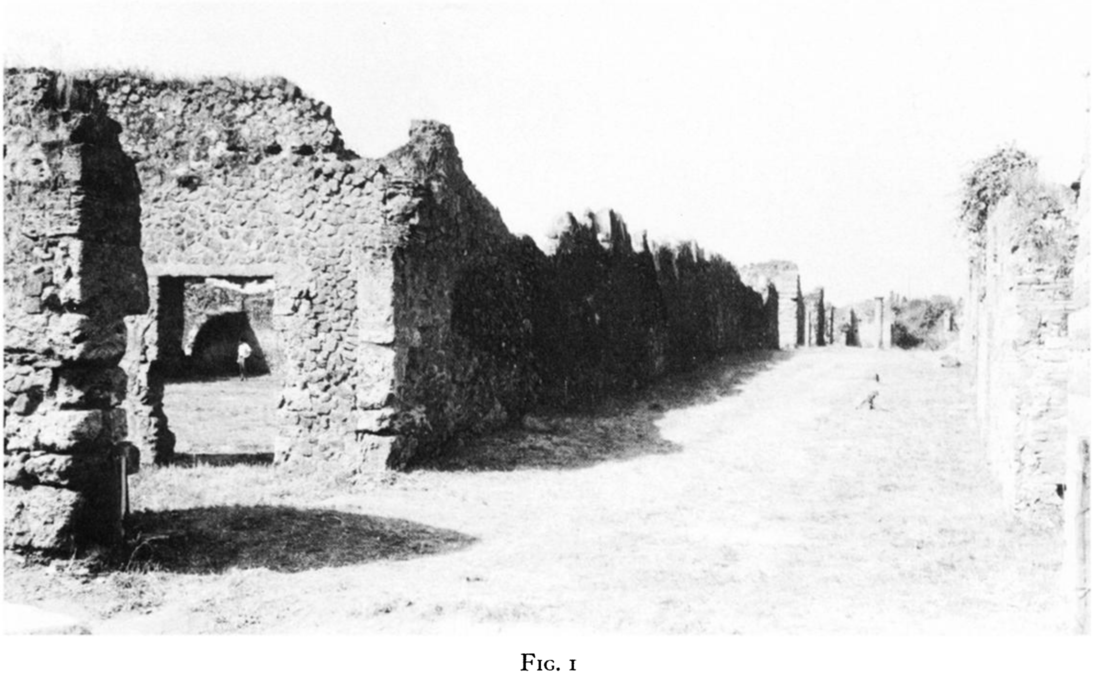


FIG. 1

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[6] H. Eschebach, *Die Städtebauliche Entwicklung des antiken Pompeji* (Heidelberg 1970) 122 identifies this property as a "Weindepot mit Stallën." He does not locate the stable, but presumably he is referring to the area back of the shop.

[7] Although the large area which comprises most of this property had been badly damaged by the passage of trucks at the time of original excavation, the trial trenches that we dug in 1972 gave sufficient evidence to indicate that this area was a vineyard. For a discussion of the various unique features found in this vineyard, see Wilhelmina F. Jashemski, "Vintage Pompeii," *Natural History*, May, 1975, 54-57.

[8] See Giuseppina Cerulli Irelli, "Un'officina di lucerne fittili di Pompei," in the forthcoming issue of *Cronache Pompeiane* II.

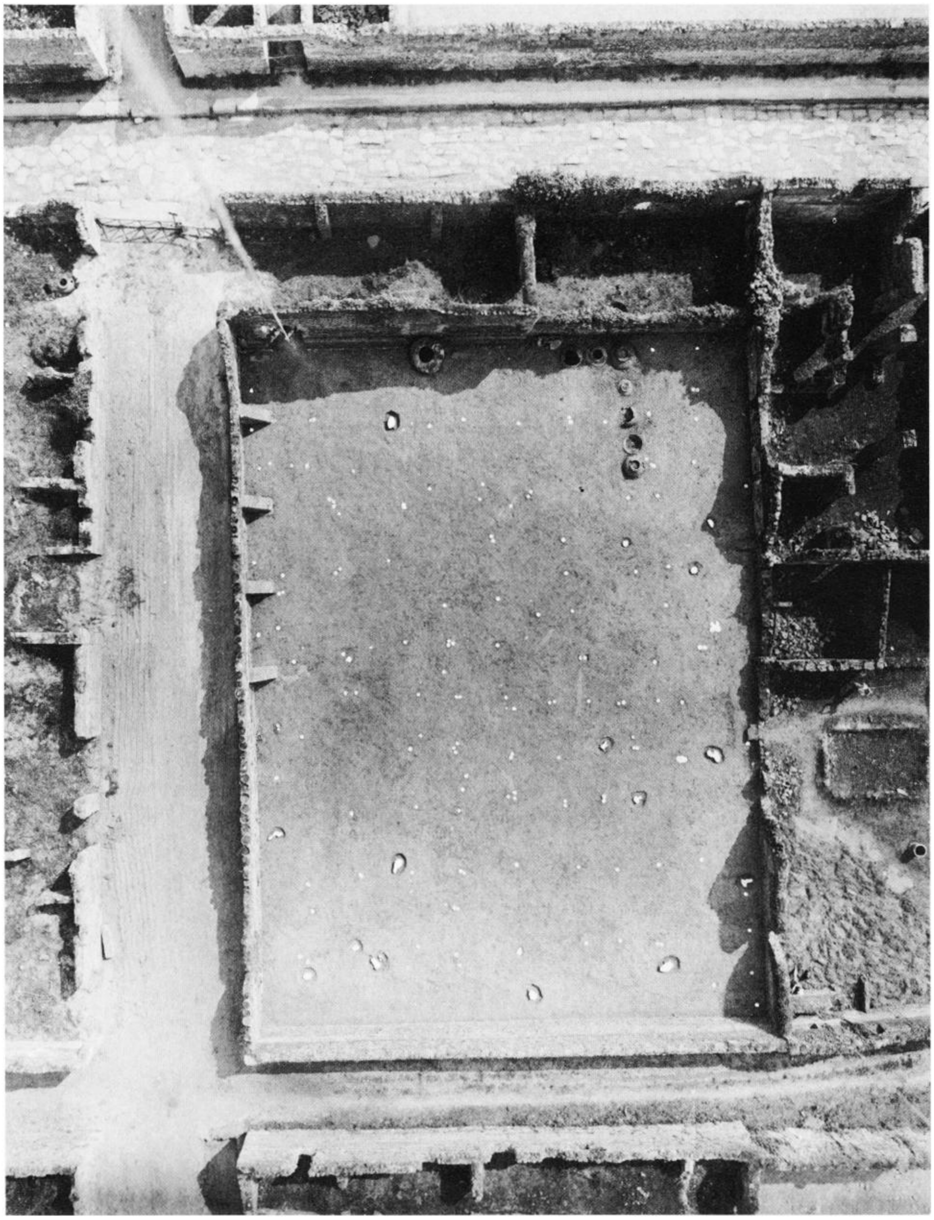

Fig. 2. Photograph Julian Whittlesey Foundation

wall.[9] Prominently displayed on the west end of the street side of this wall was a huge phallus (37 cm. high) that had been carved from Sarno limestone against an arch-shaped background and painted red (fig. 3). It is not unusual to find phallic symbols throughout the city, but this one, removed shortly after excavation and only recently restored, is unique.

The ancient Roman was ever fearful of the evil eye and the injury that it might work on his person or property. Protection against such evils, as well as against the various unknown perils of sickness,

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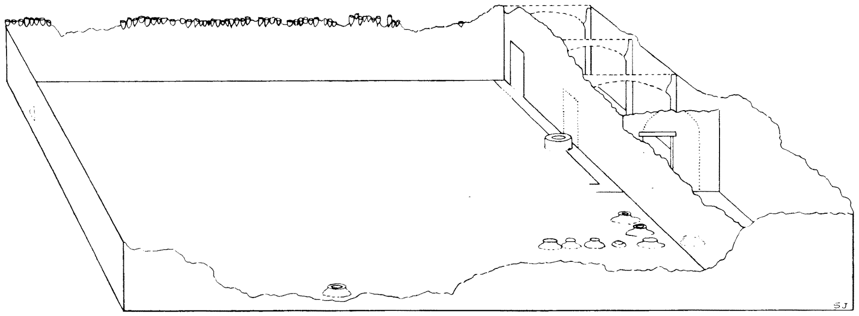
[9] I know of only one other such wall, an interior garden wall at II. i. 1, which is lower than this wall. There are a few amphorae embedded in the top of the street wall of the garden at I. xii. 14, and it appears that there were originally more amphorae there.



ILL. 2

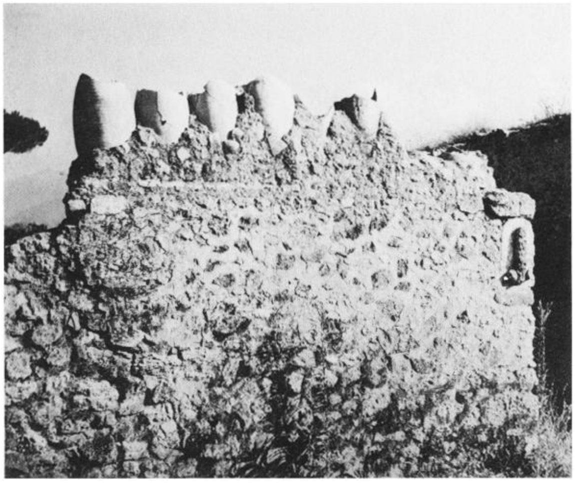


FIG. 3

accident, or other harm, was sought through magical use of amulets. Amulets in the shape of parts of the body (hand, phallus, vulva) were believed to have apotropaic efficacy.[10] The use of the phallus as an amulet to protect against witchcraft was so common that the name *fascinum*, which means "a bewitching, or witchcraft" came to be applied to the *membrum virile*.[11] The phallus even became deified as the god Fascinus. Babies were put under the protection of Fascinus[12] (i.e., they wore an amulet in the shape of a phallus or *fascinum*); generals also were protected by this deity, for the image of a phallus was hung under the chariot of a general at his triumph to protect him from jealousy.[13] The walls of towns, all kinds of public and private property, open and public squares, and tombs were protected in this way.[14] A large number of amulets have been found at Pompeii "generally accompanied by phallic tokens of bronze, glass, lapis lazuli, and amber."[15] The phallic symbol above the ovens in Pompeian bakeries perhaps had the same function. Best known is the one found in the bakery located at the corner of the House of Pansa at VI. vi. 17-21. The rectangular niche in the curve above the oven once held a phallus of red travertine that had been painted red,[16] accompanied by the legend *hic habitat felicitas*.[17] The baker Sextus Patulcus Felix at Herculaneum took greater precautions. Over his oven door there were two phalli to protect his baking; two more were found in the dough-room.[18] The front of the dye-furnace at the entrance of IX. vii. 2 on the Via dell'Abbondanza is decorated with a winged phallus. There is a much larger phallus (48 cm. long) on the west side of the furnace. Various phalli are found on exterior walls at Pompeii,[19] but the one at the street corner on the shop-house garden wall is unlike any found thus far.[20]

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[10] *OCD* s.v. "Amulets"; Daremberg-Saglio, s.v. "*Fascinum*"; and *RE*, s.v. "*Fascinum*."

[11] See Porphyrion on Hor. *Epod.* 8.18: *aeque [fascinum] pro virili parte posuit, quoniam praefascinandis rebus haec membri deformitas adponi solet.*

[12] Plin. *HN* 28.39.

[13] Supra n. 12.

[14] Otto Jahn, "Über den Aberglauben des bösen Blicks bei den Alten," *Berichte über die Verhandlungen der sächsischen Gesellschaft der Wissenschaften Philologisch-historischen Classe* 7 (1885) 69-79. For apotropaic phalli on the city wall beside the gates at Alba Fucens see *NSc* 1950, 278, 283; G. Picard, *The Ancient Civilization of Rome* (Geneva 1969) 223 comments on the number of phalli to be seen on street corners "which were considered as particularly dangerous spots."

[15] Pierre Gusman, *Pompei: The City, Its Life and Art* (London 1900) 127.

[16] Giuseppe Fiorelli, *Pompei* (Naples 1875) 105.

[17] *CIL* 4.1454.

[18] A. Maiuri, *Ercolano: I nuovi scavi 1927-1958* (Rome 1958) 458.

[19] A phallus above the entrance door served to identify a *cella meretricia*.

The use of amulets as protection against the *jettatura* is still common in southern Italy today, and their use is not confined exclusively to the less educated classes.[21]

THE GARDEN

Our discovery that the large *insula* (II. v) to the north of the amphitheater was a vineyard, and not the *Foro Boario*, or Cattle Market, as had been thought for many years,[22] made me believe that other large open areas in the city were perhaps also planted, and not used for commercial or other purposes. In 1971 I made a systematic survey of those parts of Pompeii uncovered during the last period of extensive excavation, to determine in which areas it was still possible to make subsoil excavations and recover the ancient planting pattern. If an area was planted at the time of the eruption, I have been able to find the ancient root cavities and recover the ancient planting pattern, even in areas that have been already excavated, if modern vegetation has not been too destructive.[23] The large open area to the west of the shop was an obvious candidate for a garden, even though no garden had been found thus far attached to a shop. Our foreman agreed that the area was probably a garden, for at the time of the original excavation Della Corte had told him that he believed that the broken amphorae had been built into the top of the wall to prevent boys from climbing into the garden and stealing fruit.[24] Today Italian gardens frequently have sharp pieces of glass or pottery built into the top of a garden wall for the same purpose.

An examination of the walls showed that this large open area had at least in part been previously occupied by construction which was probably destroyed by the earthquake in A.D. 62. Plaster on the lower part of the east end of the south wall showed evidence of walls having been removed. A short length of foundation wall perpendicular to the south wall still remained, also a small area of the original floor. Such foundations were only about 100 cm. deep and could be quickly grubbed out if a destroyed area were to be planted. It is not unusual to find areas from which earthquake debris has been cleared made into a garden.[25]

Fortunately the overgrowth in this area had few large roots, so I was hopeful that the ancient planting pattern might be recovered, if indeed this area had been planted. When we removed the weeds, however, we found that the original excavators had removed most of the *lapilli*, leaving little protective covering over the level of the ground in A.D. 79. Trial excavations, in 1971 along the west wall, almost immediately revealed the cavity of a large tree root 40 x 28 cm. at ground level, with a tap-root 66 cm. long, and four long lateral roots, as well as a row of smaller cavities. Trial trenches along the north wall uncovered more cavities. Cavities were found in 23 locations in 1971; in seven of these locations there were two cavities. This suggested that the entire area had probably been planted. All of the cavities were emptied, measured, and cement casts made.

THE PLANTING PATTERN

During our 1972 season we completed the excavation of this garden. Cavities were found at 128 locations (ill. 3). The largest dimension at ground level ranged from 2.5 to 63 cm. with a median of 10 cm.; the depth ranged from 10 to 76 cm., with a median of 25 cm. Eleven cavities had a largest dimension of 30 cm. or more and were obviously those of trees. Five others with a largest dimension ranging from 22 to 29 cm. also appeared to be those of trees. The larger trees (over 30 cm.), with one exception, were all planted along the edges of the garden. This reminded us of the location of the fifty-eight trees found in the large vineyard to the north of the amphitheater (II. v), where the trees were for the most part between the second and third rows from the wall, as well as between the

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[20] There is a small walking phallus at the street corner at III. iv. 3; a larger phallus marks the street corner at IX. v. 1.

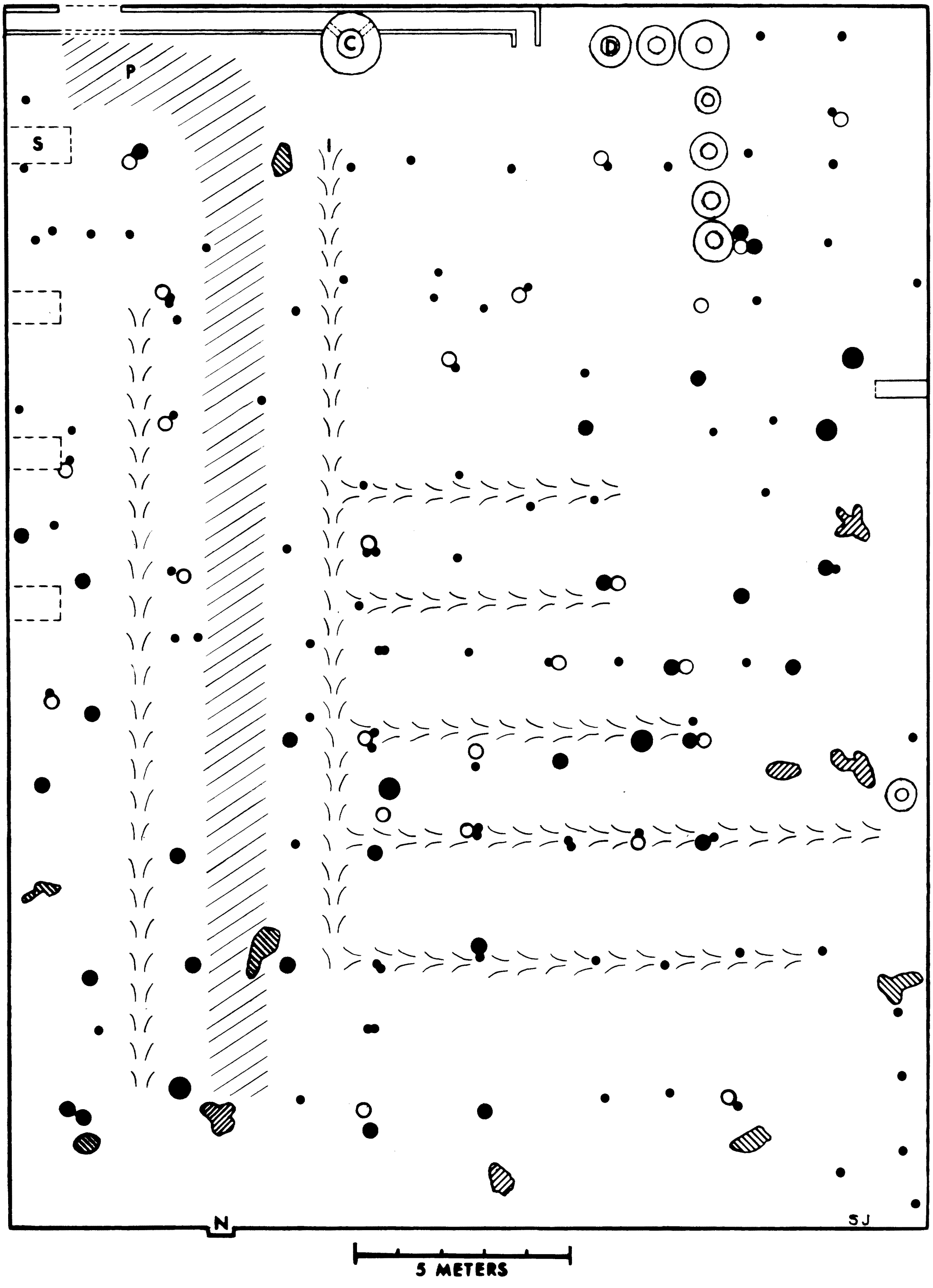
[21] The phallus as well as the horn (*corno*) is carried for protection against the evil eye, or misfortune of any kind. The gift of a small winged gold phallus to a twelve-year-old boy by his grandmother, or of a necklace with a phallus to a small child, would have been completely understandable to an ancient Pompeian, as would the farewell gift of a small gold phallus for the key ring, which one of my graduate students received from his Neapolitan friends upon the completion of his research in Italy.

[22] *AJA* 77 (1973) 27-41, pls. 3-4; W. Jashemski, "Large Vineyard Discovered in Ancient Pompeii," *Science*, May 25, 1973, 821-30.

[23] For the technique used see *AJA* 72 (1968) 70, 72.

[24] See also Pio Ciprotti, *Pompei* (Rome 1962) 88.

[25] For other examples, see VI. v. 7 and VIII. vi. 5.



ILL. 3

first and second rows of vines on each side of the path, with only a few placed at random throughout the interior.[26]

In 23 locations in this garden there were two cavities; in five there were three cavities (ill. 3). These cavities ranged in size from 1.5 x 2.5 cm. to 14 x 17 cm. The planting pattern is by no means precise, but the roots tend to be laid out in irregular rows running both north-south and east-west. After the cavities had been emptied and measured, cement casts were made. Most of the garden was planted up to the walls with the exception of an unplanted area about 3 meters wide along a good part of the east edge of the garden and an unplanted area under the west wall (ill. 3). A hole (about two meters in diameter) close to the south wall, partially filled with stones, was at first difficult to explain, but an old plan showed that the original excavators had found an embedded *dolium* at this location.

IDENTIFICATION OF THE ROOT CAVITIES

The informal planting pattern and the damage caused by previous excavation make identification of the root cavities difficult. In the large vineyard (II. v) the vines were planted exactly four Roman feet apart; and there were two cavities at almost every location. Because we were able to excavate an area covered with the original fill we could definitely identify one cavity as that of a root and the second cavity as that of a stake.[27] The precision with which the vines were planted made it possible to recognize all other cavities as those of tree roots. These were usually found in the center of the space between four vines. The few small cavities found near larger ones were undoubtedly volunteer seedlings such as we had seen in modern vineyards.[28] It was also easy to identify the vines in the garden of the House of the Ship *Europa*; here they had been planted almost exactly four and one half Roman feet apart. These cavities were smaller, and there was only one at each location, indicating that the vines were not over two years old and too young to be staked.[29] In both gardens the depressions for holding water were preserved.

It seems quite likely that there were more than sixteen trees in this garden, but the presence of seven *dolia*, partially embedded in the ground, at the east end of the garden (ill. 3; fig. 2) suggests that it may also have been a vineyard. The broken lids were found near the *dolia.* The *dolium* embedded in the ground in the area at the back of the shop was adjacent to the wall, and in line with the five *dolia* on the opposite side of the wall. This makes a total of nine *dolia* in this property, counting the one that had been removed from near the south wall. After juice was extracted it was stored for fermentation in *dolia* embedded either in the dirt floor of a shed, or in the open. According to Pliny,[30] weak wines were kept in *dolia* sunk in the ground, but strong wines should be exposed to the air. He says that "the best way of treating the finest wines of Campania seems to be to set them out in jars in the open air, exposed to the sun, moon, rain, and wind."[31] Wine in the large vineyard (II. v) was stored in an open shed, in *dolia* completely embedded in the ground.[32] In the small informal vineyard in the garden of the *copo* Euxinus it was fermented in two *dolia* partially embedded in the open ground.[33]

One further piece of evidence may be of help. When we cleared the overgrowth from a mound at the east end of the garden we discovered that it was a cistern that had not been excavated (ill. 3; fig. 2). It had apparently been built after the earthquake when the garden was given its present form, for the cistern was located directly in front of a door that had been walled in. A channel built along the building for the length of the upper story collected the rain water falling from the roof. The water entered the cistern from both directions through two holes (ill. 2; fig. 2). In the course of excavating the cistern, at a depth of 1.5 m. we found an almost complete roof tile with the inscription *K. V. A. N.* The tile had apparently fallen from the roof during the eruption. At a depth of 3.6 m. the cistern had a "dog-leg branch" to the west. Large pieces of plaster that had lined the cistern were found among the *lapilli* which filled it. Because of the condition of the cistern the authorities at Pompeii considered it unwise to complete its excavation, but it was obvious that it was a large one. The presence of a large cistern in the garden is significant, for it suggests that there were young trees and vegetables in the garden that would need water. Established vineyards and orchards did not require water. Columella[34] emphasizes the importance of water in the garden:

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[26] *AJA* 77 (1973) 32; *AJA* 78 (1974) 397 and n. 23.

[27] *AJA* 77 (1973) 27-30.

[28] *AJA* 77 (1973) 32.

[29] *AJA* 78 (1974) 396-97.

[30] Plin. *HN* 14.134.

[31] Plin. *HN* 14.136.

[32] *AJA* 72 (1968) fig. 5.

[33] W. Jashemski, "The Caupona of Euxinus at Pompeii," *Archaeology* 20 (1967) 41-42 and figs. 10 and 13.

> First I would warn you water to provide
> Abundantly, lest parching thirst destroy
> The life conceived within the fruitful seed.
> Then when the earth in travail bursts her bonds
> And flowery offsprings sprout from mother soil,
> Then let the careful gardener bedew
> With moderate showers the infant plant . . .

The identification of sixteen trees in this garden leaves the cavities in 112 locations still to be identified. As we noted above, in 28 of the 112 locations there were two, or (in five cases) three cavities. Nine of these cavities were clearly those of sharply cut stakes. Fifteen other cavities appeared to be those of stakes, and they did not have lateral cavities which would indicate a root cavity. If there were vines at each of the 112 locations, and there were a total of 24 stakes (three had no adjacent roots), that would mean one stake for approximately every four or five vines. But the distance between the cavities and the size of the cavities indicates that some of them were probably trees. The vine cavities in the large vineyard ranged in size from 1 to 8.5 cm. in diameter; 90% had a diameter of 2.5 to 5 cm. with a median diameter of almost 4 cm. The 112 locations in this garden have roots ranging in size from 2.5 cm. to 17.5 cm. with a median largest dimension of 10 cm., which is considerably larger than those in the vineyard. It is of course quite possible that we have older vines in this garden. If there are more than sixteen trees, as seems almost certain, the proportion of stakes to vines would be considerably greater. It is also quite possible that some of the cavities that have no laterals, but were not clearly cut, and hence not identified as stake cavities, were in fact stake cavities. The casual method of staking, which uses stakes both at the location of the vine and often in between vines, is common in the informally planted backyard gardens in the Pompeii area today. It is also possible that trees may have substituted for posts as they frequently do in such gardens today.

It is not at all unusual to find trees and vines growing in the same garden, either in antiquity or today, as I have pointed out in previous reports. In modern vineyards we have found the pear, plum, apple, fig, peach, sour cherry, apricot, sorb, loquat, walnut, and filbert, also the willow and the poplar, both of which furnished withes for tying the vines. All of these trees except the loquat, which is a modern introduction from Japan, were known to the first century Romans and could have been raised by the ancient Pompeians.[35] We also know that there was an olive tree in the large vineyard across from the amphitheater, for we found carbonized olives near one tree root cavity.[36] Our discovery of a high concentration of ancient olive pollen in the garden across the street to the east (II. viii. 6)[37] of the shop-house garden and in a garden (I. xiv. 2)[38] in the *insula* to the north indicates that olives were not as uncommon in ancient Pompeian gardens as they are today.[39] We also found carbonized grapes, grape seeds, filberts, almonds, and broadbeans in the nearby garden of the House of the Ship *Europa* (I. xv),[40] but the removal of practically all of the *lapilli* by the original excavators made it impossible to find such evidence in this garden. The roots of modern vegetation had destroyed much of the original contour of the soil and badly damaged the ancient root cavities. Fortunately, however, trucks had not been brought into this garden so the cavities did not suffer from the compression of soil due to the constant passage of trucks, as has been the case in some gardens. It seems quite probable that intercultivation was practiced in this garden, but the contour of the soil was not preserved sufficiently to be immediately evident. Intercultivation is common in the area today, and we have found evidence for it in the large vineyard and in the garden of the House of the Ship *Europa*.[41] The presence of the cistern also suggests, as we pointed out above, that in addition vegetables were probably grown in this garden.

INFORMATION FROM AERIAL PHOTOGRAPHY

The aerial photos made by the Julian Whittlesey Foundation were an important aspect of our work during the 1974 season. We pulled the soil away from the casts of the large tree roots and painted them white, preparatory to taking aerial photos. The casts of the smaller roots and of the stakes we marked with white discs. The aerial photos strikingly show the planting patterns in the various gardens that we have excavated. They also clearly reveal the soil contours of the gardens, even badly damaged contours that could not be seen from the ground.

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[34] *De re rustica* 10.143-48.

[35] *AJA* 74 (1970) 66-67.

[36] *AJA* 77 (1973) 32-33 and fig. 6.

[37] *AJA* 78 (1974) 403.

[38] Report from Professor G.W. Dimbleby, Institute of Archaeology, University of London, Sept. 12, 1972.

[39] *AJA* 78 (1974) 404, n. 71.

[40] Supra n. 39, 401.

[41] Supra n. 39, 401.

Although the soil in this garden was much more damaged at the time of original excavation than in most, two irrigation channels on the north side of the garden, parallel to the north wall, can be made out (fig. 2 and ill. 3). One runs the length of the garden, beginning at the cistern. The other runs between the two "rows" of roots on the north edge of the garden. Parts of other channels can be made out with more difficulty. They run in a north-south direction perpendicular to the long channels (ill. 3). Water was apparently channeled from the long east-west irrigation channels into the north-south channels. Water was also led into the garden directly from the water channel along the building (ill. 3). This could be closed when the cistern was being filled. These provisions for irrigation make it appear almost certain that vegetables were raised in this garden.

The planting pattern of this garden was informal, and there were no formal paths such as those found in our previously reported gardens.[42] The condition of the soil, however, had suggested to us that the raised area between the two irrigation channels served as a passageway from the door and the work area near the cistern to the open area under the west wall. The path in the garden of the House of the Ship *Europa* was likewise a raised area.

SMALL FINDS; LIFE IN THE GARDEN

It is perhaps significant that with the exception of a black terra-cotta lamp with a broken handle found near the south wall (of a style dating from the first century B.C. and seldom found at Pompeii) and a small, badly corroded coin found about 21 cm. down in the tree-root cavity in the northeast part of the garden, all of our small finds were either from the "path" or from the area near a crudely built niche in the west wall. On the path we found a beautiful bronze hair ornament (preserved length 10 cm.), with a delicately etched head of a bird at one end, also four badly corroded coins. In 1974 while removing the soil from the casts at the edge of the path, we found a tiny lamp (preserved length 5.2 cm.),[43] such as were used both as toys and votives, and a very useable whetstone (length 11.3 cm.; fig. 4).

The soil in the area near the triangular niche was well-packed. The niche (44 cm. wide, 43 cm. high and 30 cm. deep) was crudely built, but it apparently had been put there for some purpose (fig. 5). A statue seems unlikely, and no *lararium* built in

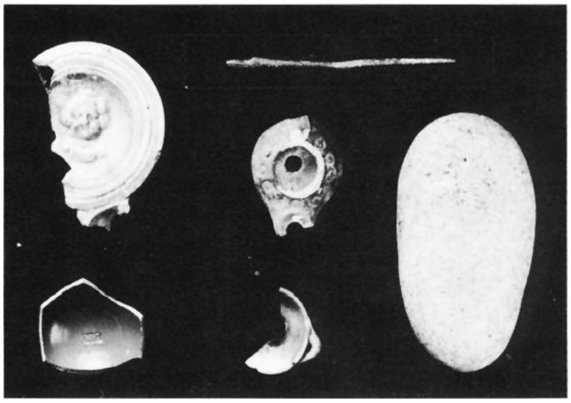

FIG. 4

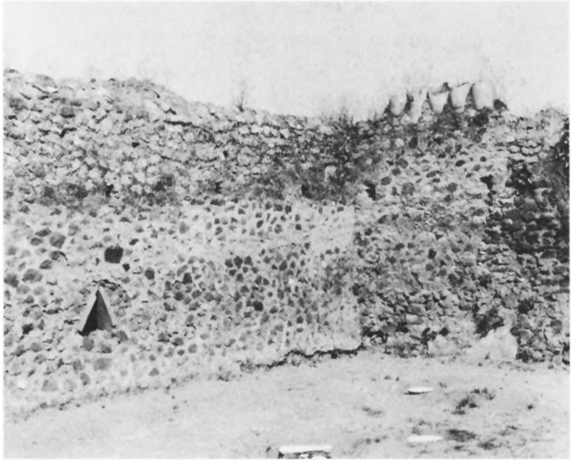

FIG. 5

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[42] *AJA* 77 (1973) 31-32 and ill. 2 and figs. 3, 4; *AJA* 78 (1974) 394 and ill. 4. There is also a definite passageway in the "Garden of Hercules" (II. viii. 6). A preliminary report of the excavation of this garden was given at the Seventy-Sixth Annual Meeting of the Archaeological Institute of America in Chicago on December 29, 1974.

[43] Dr. Giuseppina Cerulli Irelli, who is making an inventory and study of all the lamps that have been found at Pompeii, tells me that lamps this small have been rarely found.

this fashion has been reported. Perhaps the niche held a lamp. It is easy to picture the family gathering here in the cool of the late afternoon and evening, to escape the heat of their stuffy second floor dwelling. I found it quite delightful to work in this area in the shade of the west wall from four o'clock on. The three trees nearby would have made this area pleasant much earlier in the day in antiquity.

The objects found in this area are revealing. We found two fragments of terra sigillata: a small dish with the potter's name NI:C͡O(stratus)[44] (fig. 4) and part of a bowl (preserved length 6.3 cm.). We also found various fragments of coarse ware, broken perfume bottles, a loom weight (6 x 12 cm.), a badly corroded small coin,[45] a broken lamp decorated with the head of a cupid with hair dressed in a top-knot, and a fragment of a very small dish with one handle (3.5 cm. in diameter), of a type that has been classified both as a doll dish or votive (fig. 4). The original excavators likewise found significant objects in this area. These included an iron tripod such as was used for cooking food, a dish (terra sigillata), three terra-cotta lamps (one of which was very small, only 6.5 cm. in length), a small bronze container and small tweezers, a conical-shaped alabaster container, a glass perfume bottle, and three lead weights[46] (fig. 6).

The family obviously spent considerable time in this part of the garden. The tripod and the presence of various dishes suggest that meals were cooked and eaten here. The sixteen bones and three teeth which we found were probably the remains of meals eaten in the garden. Two species were represented: *Sus scrofa* (domestic pig), 13 bones and 2 teeth,[47] and *Ovis aries* (sheep), 1 bone and 1 tooth.[48] Two bones were too fragmentary to identify. Dr. Setzer noted that most of the bones of *Sus scrofa* were from a young animal,[49] quite possibly from the same animal. One of the bones had two tool marks showing that the young pig had been used for food. Perhaps roasted piglet was one of the last meals served in the garden. The discovery of lamps in this area tells us that the family lingered in the cool of the garden after dark. The tweezers would have been useful for pulling new wick out of the oil as the wick burned.[50] The children of the family perhaps entertained themselves with their doll dishes and toy lamps, one of which had been dropped on a trip to the back garden. The modern Pompeian likewise spends his free time in the evening out-of-doors. If he has no garden, he puts his chair on the narrow sidewalk, or more often in the street, facing his house or shop, his back to the traffic.

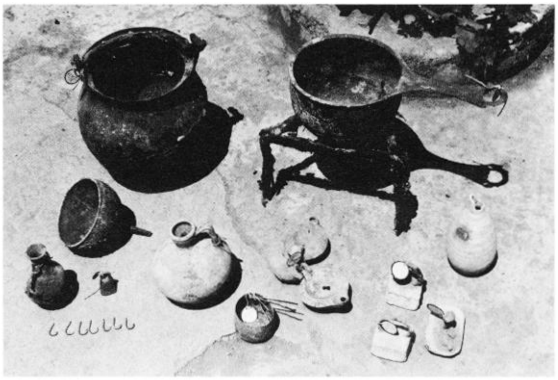

FIG. 6

The open space under the east wall was obviously left as a work area in the vicinity of the *dolia* and the cistern. This area is cool in the morning, shaded by the east wall of the building. The tree near the cistern furnished shade later in the day. It is significant that finds at the time of original excavation are also reported from this area (fig. 6).[51] Near the cistern was a large bronze *situla*, a large long-handled pan made of bronze, a bronze funnel, a small bronze amphora, a small bronze bell, small bronze tweezers, eight small bronze fish hooks (2 cm. long, 1 cm. wide), and a terra-cotta urceus, or fish sauce container, with the following label in black letters:

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[44] Professor Comfort tells me that this is the first stamp of the potter Nicos(tratus) of Pozzuoli to be reported from Pompeii. For other stamps of this potter see August Oxé and Howard Comfort, *Corpus vasorum Arretinorum: A Catalogue of the Signatures, Shapes and Chronology of Italian Sigillata* (Bonn 1968) no. 1122 a-g. Also see Howard Comfort, "Puteolan Sigillata at the Louvre," *Rei Cretariae Romanae Fautorum Acta* V-VI, p. 23, nos. 83-84.

[45] The six badly corroded coins found in this garden were more destroyed than any that we have found thus far. Even so, Dr. Charles W. Rechenbach was able to identify three quadrantes (one from the reign of Augustus, the other two probably from Augustus) and two asses, one from Tiberius (H. Mattingly, *Coins of the Roman Empire in the British Museum* [London 1923] I, no. 157) and one from Nero. The sixth coin was perhaps a semis. The reverse of each coin was totally destroyed with the exception of the ass of Tiberius.

[46] Pompeii Inventory Books, March 29, 1959, nos. 12416-27.

[47] *Sus scrofa*: orbit (with 2 tool marks), distal end of radius, 2 metapodials, scapula, shaft of radius, sternal, calcaneum, astragalus, distal phalanx, fragment of a long bone of a vertebra, another fragment of a vertebra, a limb bone badly battered, and two molars, one of which was unworn.

[48] *Ovis aries*: second cervical vertebra, and one premolar.

[49] The classification *Sus scrofa* is used for both the domestic pig and the wild boar. Their bones cannot be distinguished (see *AJA* 78 [1974] 403, n. 63) but because the bones in this garden came from a young animal they were identified by Dr. Setzer as domestic pig.

[50] For a discussion of tweezers used for this purpose, see H.B. Walters, *Catalogue of the Greek and Roman Lamps in the British Museum* (London 1914) xiii and catalogue nos. 1443-67, pp. 220-21; he also cites lamps that have been found with tweezers attached.

GA SCOMBR(i) SCAURI
EX OFFICINA SCAURI

CONCLUSION

This shop-house garden, the first such ever excavated and studied, gives us a good picture of the garden of one of the humble citizens of Pompeii. Informally, but intensively planted in trees, vines, and vegetables, it enabled the family to produce their own wine and fruit, with perhaps a surplus to sell. A large number of fruit and probably nut trees, always attractive to small boys, may explain the broken amphorae along the top of the north wall. Or the amphorae may have been simply an easy way of increasing the height of the wall.[52] The *fascinum* on the outside wall at the street corner no doubt provided special protection, perhaps not only for this property, but for the entire neighborhood. On the opposite corner was the Market-garden orchard of the House of the Ship *Europa*, with its special fruits and nuts; across the street to the west (I. xxi) was another large open area that we found to have been cultivated;[53] across the street to the east was still another garden (II. viii. 6), all perhaps in need of protection. The discovery of this humble shop-house garden adds another to our growing list of large cultivated areas within the city-walls and furnishes further evidence for the study of ancient land use and city planning, especially after the earthquake of A.D. 62.

Today only a few meters from the excavations, the visitor to Pompeii sees many small shops, little different from those in the ancient city. Above the shops are dwellings, and at the rear of one I discovered a garden, greatly cherished by the owner who lived in the rooms over his shop. It was much like the garden of our unknown shop-keeper; there were many fruit trees of different varieties and sizes, also a few vines. Some trees were only two years old, but the fig tree had been there for many years. Under the trees and vines, vegetables were growing. Such a shop-house garden in the modern city is still another reminder of the continuity of life in the shadow of Vesuvius.

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[51] Pompeii Inventory Books, November 11, 1958, nos. 12309-15; December 6, 1958, terra-cotta urceus, no. 12340.

[52] Broken amphorae were sometimes incorporated into a wall to lighten the construction.

[53] This area was excavated during our 1973 and 1974 seasons and was found to be planted. A full report will appear in *AJA* as soon as the analysis and identification of the carbonized material and ancient pollen found in this garden is completed.

"The Garden of Hercules at Pompeii" (II.viii.6): The Discovery of a Commercial Flower Garden
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"The Garden of Hercules at Pompeii" (II.viii.6): The Discovery of a Commercial Flower Garden*

WILHELMINA F. JASHEMSKI

(Pls. 57-59)

Abstract

The "Garden of Hercules" takes its name from the statue worshipped in the large lararium of the garden (II.viii.6) attached to a modest house to the W of the Great Palaestra at Pompeii. This garden was partially excavated in 1953-1954, but even in previously excavated gardens it is still sometimes possible to find evidence of ancient plants. University of Maryland excavations from 1972-1974 uncovered here a garden very different from any found thus far. The soil contours, planting pattern, provisions for watering, ancient pollen and the perfume bottles found suggest that this was a commercial flower garden, the products of which were used in making the perfume or perfumed oils, and perhaps the garlands, so important in ancient Roman life. Ancient writers speak of the importance of the flower industry in Campania; wall paintings at Pompeii picture the procedures of making garlands and perfume; inscriptions attest to the activities of the ***unguentarii***. This garden, however, provides the first evidence for commercial flower growing within the city.

THE SITE

University of Maryland excavations discovered in the large open area attached to a humble house (II.viii.6), W of the Great Palaestra, a garden very different from any known thus far (ill. 1; pl. 57, fig. 1). This property was bordered on the N by a narrow lane that led directly to the rear of the palaestra and the amphitheater beyond. The entrance to the property was on the busy Via Nuceria which led to the Nucerian Gate, through which traffic from this part of town passed to the port on the Sarnus river.

In 1971 I found it almost impossible to enter the house for it was completely filled with saplings and brambles that had grown up since the site had been originally excavated in 1953-1954.[1] It was necessary to cut our way through the vegetation that completely filled the atrium, before we could eventually examine the badly overgrown garden. It looked as if all evidence of ancient roots had been destroyed, but when a trial trench showed that it was possible to recover root cavities we decided to clean the garden the following year. Fortunately there were some areas in which the original lapilli had been left to a sufficient height to preserve the ancient soil contours and cavities. When we

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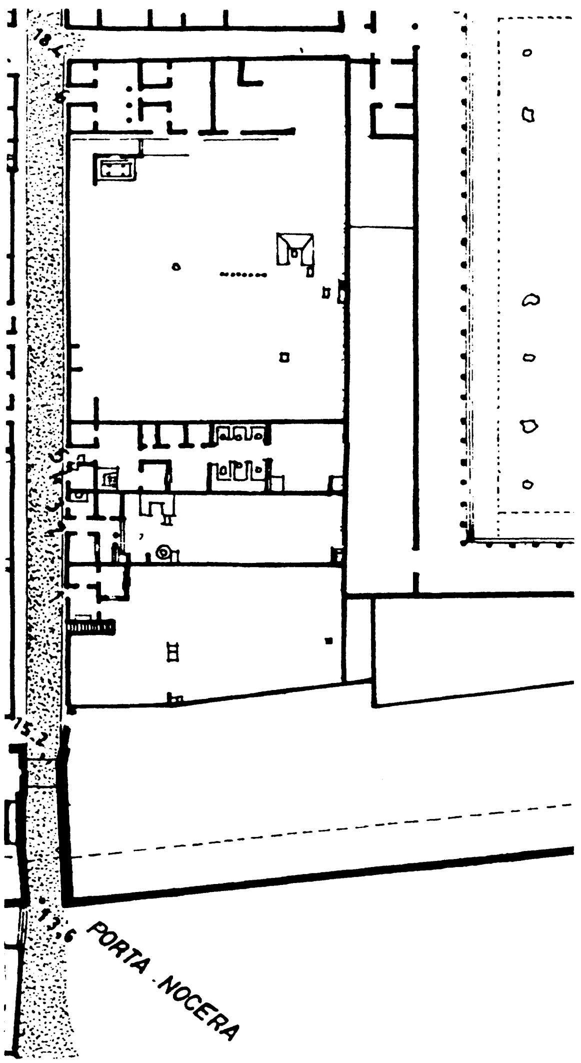
* An earlier draft of this paper was given at the Seventy-sixth Annual Meeting of the Archaeological Institute of America at Chicago on December 29, 1974. This garden was excavated during the summers of 1972-1974. Funds for the excavation were provided by the National Endowment for the Humanities and the General Research Board of the University of Maryland. Trucks, additional workmen and other valuable assistance were provided by the administration at Pompeii. All photographs (except pl. 57, fig. 1 by the Julian Whittlesey Foundation, pl. 58, fig. 9 by the Department of Agronomy, University of Maryland) are by Stanley A. Jashemski.

Our work at Pompeii was again greatly facilitated by the generous cooperation and gracious hospitality of Prof. Alfonso de Franciscis, Superintendent of Antiquities for the Provinces of Naples and Caserta, and of Dr. Giuseppina Cerulli Irelli, Director of the Excavations at Pompeii, who again generously made available the facilities at Pompeii. Domenico Pelli, Chief Assistant at Pompeii, also gave valuable help and advice. Nicola Sicigiano is our able foreman.

Gratitude is also expressed to Prof. G.W. Dimbleby of the Institute of Archaeology, University of London, who so generously made our pollen analyses; to Dr. Frederick G. Meyer, Research Botanist, in charge of the U.S. National Arboretum Herbarium, for his generous help in identifying carbonized plant specimens and plants in the wall paintings, and comparing them with contemporary plants; to Prof. John Foss of the Department of Agronomy, University of Maryland, for his valuable analyses of both the ancient and modern soils at Pompeii, to Dr. Henry Setzer, Mammalogist in charge of the African Section at the Smithsonian Institution, who generously identified the bones found in our excavations, and to Dr. C. Fideghelli of the Istituto Sperimentale per la Frutticoltura, Ministero dell'Agricoltura at Rome, who visited our excavations frequently and shared with us his detailed knowledge regarding the culture of fruit trees in Campania.

[1] There are no excavation reports for this *insula*, but entries in the Inventory Books, which list objects deposited in the Antiquarium or in a storeroom at Pompeii, fix the approximate time of the original excavation as 1953-1954. For entries in the Pompeii Inventory Books see infra nn. 2-6. This site (now II.viii.6) is called II.xi.6 in the Inventory Books, in *NSc* 1958, and *CIL* 4, suppl. pt. 3, fas. 4.

Changes made in the boundaries of Regions I and II have resulted in changes in the numbers of many *insulae*. H. Eschebach, *Die städtebauliche Entwicklung des antiken Pompeji* (Heidelberg 1970) 124, incorrectly identifies this property as a



Ill. 1. Region II, *insula* viii. (From plan of Pompeii in H. Eschenbach, *Die städtebauliche Entwicklung des antiken Pompeji*)

cleaned the dense overgrowth near the E wall in 1972 we uncovered a large aedicula lararium in which saplings were growing; in front of the lararium was a masonry altar, and nearby a large masonry triclinium. A masonry serving table, with an arched niche below for fuel, stood in front of the triclinium. It was near the triclinium that the original excavators found a human skeleton, two gold finger rings and five gold coins. There were also seven medical instruments, two probes and a bronze strigil.[2]

Near the shrine was a marble statue of Hercules (height without base ca. 0.57 m.), badly damaged and repaired in antiquity, especially the head, the right arm and the left foot[3] (pl. 57, figs. 2 and 3). In the back of the statue is a hole by which the statue was probably fastened to the lararium (pl. 57, fig. 4). A small draped terracotta figure[4] (0.155 m. in height) with considerable traces of faint red on the drapery and a slender terracotta female winged figure[5] (0.165 m. in height) appear to have been votives. There were also four terracotta lamps, two bronze tweezers, useful for pulling new wick out of the oil as the wick burned, and a Bacchic herm.[6]

Some distance to the S of the triclinium was an unusual doghouse. An old and much mended amphora (0.70 m. x 0.50 m.) had been cut in half lengthwise and placed on a low masonry wall about 0.15 m. high; the mouth of the amphora was the door through which the dog entered his house.[7]

THE PLANTING PATTERN

Because the soil was badly damaged, work progressed slowly in much of the garden. There were only eleven tree root cavities with a largest dimension of 30 cm. or more at ground level. Seven were in the garden, three along the walls, one in front of the NW corner of the lararium. The huge but partly destroyed cavity to the W of the cistern, when emptied of the lapilli that had filled it when the ancient root decayed, was the largest found up to this time. Its greatest length at ground level was

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"Hospitium mit Stall und Gartentriklinium." He does not locate the stable; perhaps he is referring to the area at the back of the house, which we found to be planted.

[2] Pompeii Inventory Books, May 11, 1953, nos. 10182, 10183 (rings); 10184-87, 10198 (gold coins); April 22, 1953, no. 10121 (6 items), no. 10124 (medical instruments); nos. 10122, 10123 (probes); no. 10140 (strigil).

[3] Pompeii Inventory Books, April 22, 1953, no. 10138.

[4] Pompeii Inventory Books, April 27, 1953, no. 10150.

[5] Pompeii Inventory Books, February 26, 1954, no. 10569.

[6] Pompeii Inventory Books, April 22, 1953, no. 10126, February 9, 1954, no. 10552, July 6, 1954, no. 10939 (lamps); April 22, 1953, nos. 10119, 10120 (tweezers); February 9, 1954, no. 10541 (herm). I have not been able to locate the herm.

[7] C. Giordano and G.V. Pelagalli, "Cani e canili nella antica Pompei," *Atti dell'Accademia Pontaniana*, n.s. 7 (1871) 166-200 and pl. 4, fig. 19.

approximately two meters.[8] The sizeable and perfectly preserved tree root cavity to the right of the altar had a long lateral root that had become misshapen in growing against a foundation wall of a previous structure that had not been grubbed out. The discovery of more remnants of foundations as well as other evidence of previous construction, such as walls projecting into the garden from the S and W in the SW corner of the garden, indicate that rooms destroyed probably by the earthquake of A.D. 62 had been cleared and the garden extended to include those areas. The large number of post cavities was difficult to explain. The row parallel to the W wall and 3.3 m. from it apparently supported a shed; holes for the roof support can be seen in the wall.

Built against the house on the N edge of the garden was a masonry construction that looked like a long bench. When we cleaned the overgrowth from it we discovered that it was filled with soil, and apparently had served as a planter, perhaps for starting small plants.

It was, however, the unique soil contours that made this garden unusual. A passageway led from the area outside the door into the garden, continuing to a short distance beyond the cistern. At this point it turned to the left and continued to the triclinium and the altar in front of the lararium. Under a large pile of original lapilli, on the right side of the path leading to the triclinium, we found a perfectly preserved bed in which, after a rain, we discovered round formations; in the center of each there had once been a very small plant, too small for lapilli to have preserved the root cavity. Around each small plant was a depression for water (pl. 59, fig. 15). As we continued to clear the garden, we began to find evidence of other beds. Aerial photos show clearly the pattern of the root cavities and stakes, and in a remarkable way reveal the soil contours, even badly damaged ones that could not be seen from the ground. The garden had been laid out in wide beds that were separated by water channels, and it was in these channels that most of the root cavities were located (pl. 59, fig. 1).

THE WATERING SYSTEM

Careful provision had been made for watering the plants grown in this garden. Some rain water was collected from the roof by the dolium embedded in the earth next to the house, and also by the nearby larger dolium mounted on a masonry foundation to the E of the door leading into the garden. The remains of a similar foundation on the other side of the door suggest that it too had held a large dolium. The nearby pool in the NW corner of the garden was also filled with rainwater from the roof, as part of the preserved channel which carried the water into the pool clearly showed.

Additional water to supplement the rainwater had to be carried in, for the aqueduct had not been extended to this zone.[9] Water carried to the garden was poured from the street side through an amphora tip inserted in the E end of the N wall to fill the dolium embedded in the NE corner of the garden (pl. 59, fig. 13). When the dolium was full, the water spilled over into the channel along the E wall, watering the young trees growing in the channel. The water eventually reached an embedded half-dolium, the overflow from which continued to run along the wall. Then for several meters we found no cavities, for the soil next to the wall had been cut far below the original A.D. 79 level; near the wall some distance further a large hole indicated where another half-dolium had been embedded. The water was apparently at times channeled in front of the lararium, for the water course continued on the other side of the lararium to a half-dolium embedded in the SE corner (pl. 59, fig. 11); when it was filled, the water overflowed into the channel on the S side of the garden where another half-dolium had been embedded. A hole had been made in the wall projecting into the garden from the S wall so that the water could continue its flow along the wall. There were also water channels along the N and W walls in the NW corner. It is obvious that special care had been taken to provide water for the trees along the walls.

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[8] It was obvious that the root system had pushed above the ground in the manner of very old trees; the circumference of the tree rising from these gnarled roots would have been smaller than the circumference of the cavity.

[9] The aqueduct had been badly damaged by the earthquake of A.D. 62, but putting it into at least partial working order as soon as possible was a high priority. The water distribution tower at the Vesuvian Gate had not yet been repaired at the time of the eruption, but a secondary source of water had been piped into the city and was available in some houses. It had not yet reached the Great Palaestra. See A. Maiuri, "Pozzi e condutture d'acqua nell'antica città," *NSc* 1931, 546-76.

Water from the channels along the walls, as well as water taken from the pool and from the cistern, was directed into the narrow water channels that divided the garden into beds; from these channels the water was then led as needed into the beds. The beds were not all on the same level. Those on the N were slightly higher than those on the S, thus conforming to the natural slope of the land. To insure the flow of water from the higher to the lower levels the water channels on the N were placed higher than the beds, those on the S lower. The modern Pompeian shapes his planting beds in the same way, even though the difference in the heights of the beds is sometimes much greater than in the "Garden of Hercules" (pl. 59, fig. 12). The remarkable watering system in this garden is by far the most elaborate yet found at Pompeii.

SOIL

The soil of Campania was known in antiquity for both its great fertility and its good texture. Pliny commented that it was porous like pumice, thus permitting good drainage.[10] Strabo suspected what scientists now know, namely that Campania owed its fertility to Vesuvius, just as at Catania the volcanic ash from Mt. Aetna made the land ideal for growing vines. Strabo says that Campania was so fertile that it bore as many as four crops a year.[11] John Foss, Professor of Agronomy at the University of Maryland, who studied the morphology and fertility of the soils at Pompeii, found that the soils were generally coarse textured with loamy sands and sandy loams predominating which gave them a well-drained condition, as Pliny observed. But Professor Foss discovered that this soil had another characteristic which was very significant. It contained quantities of minute pieces of pumice, which, because of its porous character, was able to retain large amounts of moisture which would have been available to plants. A scanning electron microscope photo of a particle of this pumice magnified 240 times vividly shows the many little pockets which stored the water (pl. 58, fig. 9). This capacity of the soil made possible maximum utilization of the water so laboriously hand carried to the garden. The soil is also extremely fertile, as the ancient writers knew. Tests showed high levels of extractable phosphorus, potassium, calcium and magnesium. The well-drained condition, high water capacity, and the high nutrient status of this remarkable soil made it possible for it to bear a rich succession of varied crops.[12] Florus calls Campania the "fairest of all regions, not only in Italy, but in the whole world."[13]

TERRACOTTA POTS AND OTHER FINDS

In the root cavities of the trees along the E wall we found terracotta pots similar to those that we had found previously in the garden of the "House of the Ship *Europa*" (I. xv.).[14] The pots are all of a coarse clay, and vary in color from red to black; they have four holes, one in the bottom and three on the sides. In all the pots but one the holes had been made before firing; one makeshift pot had been made from the bottom part of a small flat-bottomed amphora by cutting a hole in the base and others in the sides (pl. 58, fig. 10). Eight pots were almost complete, and there were fragments of two others. Seven pots were found in root cavities along the E wall, one near the S wall. The fragments were in the backfill along the E wall, at the point where the soil had been disturbed. The largest pot was 14 cm. high, with a base diameter of 6 cm., a mouth diameter of 11 cm., and a maximum diameter of 13 cm. The pots were found at the bottom of cavities ranging in depth from 16 to 24 cm. Ancient writers make only a few references to the use of pots; both Cato and Pliny suggest using pots or baskets for making layers.[15] The identification of trees planted in pots will be discussed below.

Under one of the piles of original lapilli we found a perfectly preserved hoe (pl. 58, fig. 5), indistinguishable from those used at Pompeii today.

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[10] Pliny *HN* 18. 110.

[11] Strabo 5. 4. 3,8.

[12] See W.F. Jashemski, *The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius* (New Rochelle, N.Y. forthcoming 1979) for a more detailed discussion of the soils, both ancient and modern, at Pompeii and Torre Annunziata.

[13] Florus *Epitome* 1. 16. 3.

[14] This was the second time that so many pots had been found in situ in a garden at Pompeii or to my knowledge at any Italian site. See W.F. Jashemski, *AJA* 78 (1974) 399-400, for the 28 pots found in the garden of the "House of the Ship *Europa*," as well as for pots previously found.

[15] Cato *De agri cultura* 52 (repeated in 133): Pliny *HN* 17. 97-98.

This is probably the tool known to the ancient authors as the *sarculum*.[16] Not far from the hoe we found another ancient tool, a duplicate of the *martellina* that our workmen were using to clean the weeds from this garden[17] (pl. 58, fig. 6). This tool, the *dolabella* of the ancient Romans, has a working edge which is not parallel with the handle, but is inclined toward it. Throughout the garden were also many nails, as well as bones and teeth.[18]

Most unusual was the discovery of many fragments of small glass perfume bottles in the garden, a few almost complete bottles and a few broken terracotta unguent containers. In the garden area to the E of the house a number of amphorae were stacked; nearby was a large terracotta funnel.

POLLEN

In this garden was made the original discovery of pollen at Pompeii. Four soil samples were taken from the beds to the S of the path where the soil had been protected by a substantial covering of original lapilli, and six were taken near the walls where there also was a large amount of lapilli. The samples were analyzed by Professor G.W. Dimbleby of the Institute of Archaeology at the University of London. A total of twenty-three different pollens were found and three different types of fern spores.[19]

The unexpected discovery that pollen was present raises a number of questions that must be considered before any reliable interpretation of the evidence can be made. Professor Dimbleby, upon studying the soils, concluded that the pollen was deposited shortly before the eruption.[20] He warns, however, that we cannot assume that the pollen in the soil came from vegetation in the garden, for, although some pollens are insect-pollinated and not widely dispersed, others are wind-pollinated and could have blown into the garden from some distance away. Pollen might also be derived from compost or soil brought into the garden, or from the water supply.

Most surprising was the large amount of olive pollen, for the olive is not found at Pompeii today. The four samples taken from the beds showed a strong dominance of olive pollen, 79% and 89% in two of the samples. The six samples taken near the walls had significant amounts of olive pollen but also significant representations of *Polypodium* spores, one sample having 80% *Polypodium*. This was most unexpected and puzzling because the polypody fern, which is a plant of moist situations, does not grow at Pompeii today. It is probably significant that the large amounts of these spores were found in samples that came from near the walls, for this fern grows on walls. The low values of pine pollens, walnut (*Juglans*) and hazel (*Corylus*), which are wind-pollinated, would indicate that these trees were not represented in the garden, but the high values of olive pollen, an insect-pollinated tree, must mean that the olive was being cultivated. It is also significant that there were low values for weed and grass pollens in the samples taken in the cultivated beds, which would suggest that the garden beds were well-tended.

IDENTIFICATION OF PLANTINGS

The question remains as to what was grown in the "Garden of Hercules." We have seen that there were relatively few large trees and quite a few stakes. The postholes around the triclinium were those of an arbored pergola, the root cavities those of the vines that furnished shade. The huge tree root cavity near the cistern was immediately identified by Dr. C. Fideghelli of the Istituto Sperimentale per la Frutticoltura at Rome as being the shape and size of that of a very large olive tree. Our subsequent discovery of a large amount of olive pollen supports this identification, since the branches of such a huge tree would have extended over the area where the olive pollen was found. The carbonized cherries found near one tree root cavity probably provide identification for another of the trees.

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[16] See K.D. White, *Agricultural Implements of the Roman World* (Cambridge 1967) 45 for the identification of this tool and its use.

[17] H.F. de Cou and F.B. Tarbell, *Antiquities from Boscoreale in the Field Museum of Natural History* (Chicago 1912) 211 and pl. 163, call this tool a hatchet. White (supra n. 16) ix calls it a woodsman's axe.

[18] Skeletal remains representing 3 species were found. *Sus scrofa* (pig) 4 teeth; *Bos taurus* (cow) 2 teeth; *Gallus gallus* (chicken) humerus; and 5 bones too fragmentary to identify. It is impossible to know how many bones were removed with the lapilli at the time of the original excavation. We have by now become accustomed to finding bones discarded from meals, especially near garden triclinia, but all of the lapilli had been carefully removed from near this triclinium.

[19] G.W. Dimbleby, "Pompeii; Pollen Analyses," typescript report (1978) Appendix II.

[20] For the problems involved in interpreting and evaluating the pollen found at Pompeii see Jashemski (supra n. 12) where the results of Professor Dimbleby's analyses are reported. The presence of a small land snail in the soil points to a basic condition. In soils with a high pH microbiological activity is high, so that pollen preservation is likely to be poor. The presence of pollen suggests that it was deposited shortly before the eruption, after which microbiological activity was suspended.

We have seen that some trees, started in pots, had been planted at intervals near the E and S walls. This raises the question as to what type of trees would have been started in pots. Cato specifically mentions "fig, olive, pomegranate, quince, and all other fruit trees, laurel, myrtle, Praenestine nuts and planes" as trees that can be easily rooted by simply pulling over a shoot and covering it with soil, but he does add that if you wish to layer more carefully baskets, or pots that have holes in them (*in aullas aut in qualos pertusos*), should be used.[21] Pliny mentions the *sabina herba* (savine), the rosemary and the oleander as plants that can be layered.[22] He too says that if layers are to be carried some distance they should be started in baskets or pots. The Romans also started trees from seed. Pliny recommends planting pine nuts in pots with holes (*in ollas perforatas*),[23] but pines are unlikely to have been in this garden, for such huge trees would not have been planted against a wall. Trees were also started by grafting.[24] The grafting of a choice variety on a mature under-stock grown from seed in a pot produces trees that bear when they are much smaller. In an interesting passage Pliny tells us that various nations were trying to acclimatize the citron in their own countries by importing it in earthenware pots provided with breathing holes for the roots (*fictilibus in vasis, dato per cavernas radicibus spiramento*).[25] This sounds like a description of our Pompeian pots.

Today pots with three holes on the sides, larger than ours and with straight sides, are used by nurseries for growing trees and shrubs, sometimes grafted trees. We were told that the holes permitted the roots to grow outside the pot and give the plant more air; also, a plant in an embedded pot requires less watering.

In 1973 we left one pot in the ground because we did not want to destroy a root cavity in taking out the pot. The following summer when we pulled the soil away from the root cast it was impressive to see the cast of a substantial tree root which had grown out of the pot (pl. 58, fig. 8); most interesting was the discovery of a second pot nearby. The young tree which had been started in this pot had not grown, so the ancient gardener had planted another in a pot a short distance away. Dr. Fideghelli said the root growing from the pot had the appearance of a lemon tree root. Pliny (supra) tells us that the citron was imported in earthenware pots with holes; and lemons are started in pots today. It would be natural for lemon trees to have been planted near a wall for protection, as is often done today. Is it possible that there were lemon trees in the "Garden of Hercules"? (Today evergreen trees are started in pots, and deciduous trees are usually planted dry root.)

Most of this garden, however, was laid out in beds for which water was carefully provided. This makes it certain that in these beds one of two things were grown: flowers or vegetables, perhaps some of both at different seasons. The small amount of weed and grass pollen in these beds suggests that they were well weeded, but the pollen is of no help in telling us what grew in these beds. Perhaps at the time of the eruption the summer crop had been gathered and the young plants had just become established. There are good reasons, however, for believing that the "Garden of Hercules" might have been a commercial flower garden. Campania was the center of an important flower industry in antiquity as it still is today.

THE FLOWER INDUSTRY IN ANCIENT AND MODERN POMPEII

Flowers grown at Pompeii in antiquity were used for two purposes: for making garlands and for making perfume and perfumed oil. Flowers had an important place in the life of these people. A garland was a proper gift to honor not only the gods, but also the living and the dead. Guests at dinner parties were presented with garlands; homes, shops, temples and public buildings were decorated with garlands on festival days. At sacrifices priests, assistants, victims and altars were decked with flowers. Altars and lararia were frequently decorated with painted garlands, and on some the hooks or nails which held the fresh garlands are still in place. A delightful painting of cupids and psyches in the House of the Vettii portrays the making and sale of such garlands. At the right a gardener is delivering flowers on the back of a goat. A small boy trudges behind, his basket filled with flowers. In the center of the painting workers are making garlands on a large table. The finished garlands are displayed for sale on the left where a psyche is buying a garland from a cupid who holds up two fingers to indicate that the price is two asses. A painting of flower dealers in the "House of the Calpurnii" (VII. vii. 5),[26] and one in the Macellum[27] are no longer in existence and are known only from drawings. It is not surprising that Cato advises a farmer if he is near a town to plant all manner of flowers for garlands.[28] Varro suggests that it is profitable near a city to raise violets and roses for sale.[29] Columella tells how the farmer piles his baskets high with roses and *calthae* and returns from market "soaked with wine with staggering gait, and pockets full of cash."[30]

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[21] Cato *De agri cultura* 51-52; much the same list is repeated in 133.2.

[22] Pliny *HN* 17.98.

[23] Pliny *HN* 17.64.

[24] For grafting see Cato *De agri cultura* 40, 42; Varro *De re rustica* 1. 40.6-41.4; Columella *De re rustica* 5.11; 11.2.11; *De arboribus* 26; Pliny *HN* 17.99-114.

[25] Pliny *HN* 12.16.

The fame of Campanian perfume was widespread. According to Pliny there was a common saying that the Campanians produce more perfume that other countries do oil.[31] Elsewhere he states "Egypt is of all countries in the world the best adapted for the production of unguents, but Campania with its abundance of roses runs it close."[32] Four inscriptions attest to the presence of the *unguentarii* at Pompeii. They were numerous enough to give their support as a group to specific candidates in the municipal elections.[33] Since the election notices were painted on the exterior of the north wall of the Macellum beside a stairway leading to second storey shops, it has been suggested that the headquarters of the *unguentarii* was in the two northern upstairs shops of this building, facing the forum.[34] Two *unguentarii* are known by name: the freedman M. Decidius Faustus, one of the *Ministri Augusti* who set up the dedication attached to the votive offering for the year A.D. 3 in the Temple of Apollo,[35] and the *unguentarius* Phoebus who preserved his name by scribbling it on the wall of one of the little rooms of the lupanar.[36] The activities of the *unguentarii* are depicted on another small painting of cupids and psyches from the House of the Vettii. Oil is made in a press at the right of the painting. It is then stirred as it is heated and other ingredients added. The finished product is bottled and put into a cabinet for sale. A customer seated on a red cushion tests a sample on the back of her hand as a slave with fan stands by. A similar painting now destroyed was also found in the "House of the Calpurnii."[37] A fragment of such a painting which pictures the press in the preserved part can be seen in the Fitzwilliam Museum at Cambridge, England.[38] These production centers appear to be small, and none has been found thus far at Pompeii. In 1929 the careful examination of the subsoil in a small shop near the forum (VII. iv. 25) excavated a century earlier yielded portions of an oil-press sufficient for reconstruction.[39] One can only wonder if it had been set up to furnish oil for the *unguentarii* who had put up their election notices only a short distance away.

Pliny gives the general recipe for making perfume. "There are two ingredients, the juice (*succus*) and the solid part (*corpus*), the former of which usually consists of various sorts of oil, and the latter of scented substances. . . . A sprinkle of salt serves to preserve the properties of the oil. . . . Resin or gum are added to retain the scent in the solid part, as it evaporates and disappears very quickly if these are not added."[40] There were many variations of this basic recipe.[41] Some used olive oil, that produced near Capua, the perfume center of Italy, being especially esteemed. Many preferred *omphacium* (an oil or juice made from coarse raw olives or unripe grapes) because it was less greasy. There was also the costly balanos oil, made from the nut of the tree *Balanites aegyptica*, almond oil and many others. For the scent various parts of the plant might be used: flowers, leaves, twigs, roots, bulbs, wood, fruit or gum. Among the blossoms used were the rose, *leucoion*, a name given apparently both to stock (*Matthiola incana*) and to the wallflower (*Cheiranthus cheiri*), bergamot, tufted thyme, lilies and the saffron crocus.[42]

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[26] *AZ* 1873, pl. 3.2a.

[27] O. Jahn, *Handwerks und Handelsverkehrs auf antiken Wandgemälden* (Leipzig 1868) pl. 6.4.

[28] Cato *De agri cultura* 8. 2.

[29] Varro *De re rustica* 1. 16. 3.

[30] Columella *De re rustica* 10. 309-10.

[31] Pliny *HN* 18.111.

[32] Pliny *HN* 13. 26.

[33] *CIL* 4. 609, 9932a.

[34] M. della Corte, *Case ed abitanti di Pompei*³ (Naples 1965) 181.

[35] *CIL* 10. 892.

[36] *CIL* 4. 2184.

[37] *AZ* 1873, pl. 3.2b. In both paintings the customer follows the advice of Pliny (*HN* 13.19) to test perfumes by putting them "on the back of the hand, to avoid their being damaged by the warmth of the fleshy part."

[38] Fitzwilliam Museum, no. GR-2. 1964. Bought from the Sir William Aderton Fund.

[39] A. Maiuri, *BdA* 9 (1929-30) 517-20.

[40] Pliny, *HN* 13.7.

Pompeii is today the center of an important flower industry. The rich soil continues to yield at least three crops a year, as it did in antiquity. Cauliflowers are ready for market by the end of January or February; the same plot may be planted in potatoes, which mature in two and a half months. Finally flowers are planted and these mature in three or four months. Frequently land is sublet in smaller areas for a portion of the year when flowers are raised. Although many flower plots are five to ten acres in size, some are as small as a quarter of an acre. But these flowers are grown for seed. Within a three to five mile radius of Pompeii large seed companies with headquarters in France, England, Holland, Germany and Denmark have many hundreds of acres under contract for flowers. Among the varieties grown are the pansy, marigold, salvia, aster, portulaca and zinnia. Among the flowers grown in lesser amounts are the amaranth and the bachelor button, the humbler ancestors of which were favored by the Romans for garlands. Trees, often lemon or peach, at the edges of the plots, furnish shade; flowers are also planted in orchards under the trees. At other times wooden frames covered with fiber mats or plastic sheets shelter the young plants. The posts of these shelters are arranged at the edges of the beds, much as those in the "Garden of Hercules." The many nails found in this garden probably came from the frames. Flowers are also raised in large quantities in the Pompeii area today for use as cut flowers. These include carnations, roses, gladioli and tuberoses. One of the largest commercial flower growers in the Pompeii area, after studying the "Garden of Hercules," told me that the soil contours and cavities in this garden definitely indicated flower culture. He grows his flowers in the same type of beds today.

CONCLUSIONS

This property, in a neighborhood characterized by small shops,[43] was obviously a commercial one. The excavation of the three back rooms, the outlines of which are known from the upper part of the walls which are slightly exposed, may reveal more information about the nature of the business. Thus far only the vestibule leading to the small atrium, the two small rooms flanking each side of the vestibule, and the small room at the rear of the atrium with the door leading to the garden, have been excavated. In the small room to the N of the vestibule a large number of small glass perfume bottles (pl. 58, fig. 7) were found, similar to those uncovered in more fragmentary condition in the garden.

On the mosaic threshold over which his customers entered the house, the proprietor had spelled out in small white tesserae the words *CRAS CREDO*, which can be translated as the warning "I will give credit tomorrow."[44] There were also many lines scratched on the columns,[45] and on the wall in the NW corner of the atrium,[46] apparently the accounts of the proprietor, such as are frequently found in Pompeian shops. But these notations can no longer be seen; even the columns have disappeared.

We have seen that the soil contours which divided the garden into many beds, and the care taken to provide water and shade for tender plants definitely indicate that either flowers or vegetables were raised. It seems likely that vegetables were raised part of the year, but there is reason to suspect that flowers may have been one of the crops each year, as they are in so much of the area today. The presence of both olive pollen and of many perfume bottles may be of considerable significance. We have rarely found perfume bottles in the gardens that we have excavated. This was the first time that we have found more than two or three fragments in any garden; in most we have found none. There are also the many perfume bottles found in the house. Furthermore, the olive, which appears to have been produced in this garden, is an important ingredient in making perfume. Flowers raised in this garden may have been used for making perfume, and perhaps also for garlands. The flower industry was important in ancient Pompeii, as it is today.

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[41] See Pliny, *HN* 13.5-18; 15.28-31; Theophrastus, *Concerning odours* 7-34; Dioscorides, *Materia medica* 1. 52-76. See also R.J. Forbes, *Studies in Ancient Technology*^{2} 3 (Leiden 1965) 30-40.

[42] Theophrastus, *Concerning odours* 27.

[43] Directly across the street was a shop with living quarters above the shop and a large garden at the rear. See W.F. Jashemski, *AJA* 81(1977) 217-27.

[44] *NSc* 1958, 94, no. 78; 133, no. 291.

[45] *NSc* 1958, 133, no. 294a; *CIL* 4. 10176a.

[46] *NSc* 1958, 133, no. 294b; *CIL* 4. 10176b.

There is still much about this garden to be explained. It seems highly improbable that the impressive lararium and the altar at which Hercules was worshipped, and the large triclinium nearby, were used only by the occupants of this humble house, or the workers in this garden, even though Hercules is associated with fecundity and his presence is quite appropriate in a garden. Is it perhaps possible that this garden was a meeting place of those engaged in the perfume or ointment business? The ***unguentarii*** who conducted a profitable business at Pompeii were sufficiently united to support a specific candidate in municipal elections. Members of a common trade were accustomed to meeting together especially on festival days. The gold coins and gold rings found near the triclinium, as well as the quality of the two votives found suggest that this garden was frequented by people of some means. The cult of Hercules was a popular one with merchants and traders.[47] The proprietor of this garden may well have found the advice of the ancient agricultural writers very sound—flowers can be a very profitable crop.

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[47] *RE* 8, cols 587-89, s.v. Hercules (Haug); Kurt Latte, *Römische Religionsgeschichte* (Munich 1960) 215-16. Roman merchants gave Hercules a tithe of their profits as a reward for his help. L. Munius in the first century B.C. set up an inscription to Hercules Victor at Raete (*CIL* 1^2 632) in which he asks the god to help him with his arithmetic to make certain that he figures the tithe correctly.

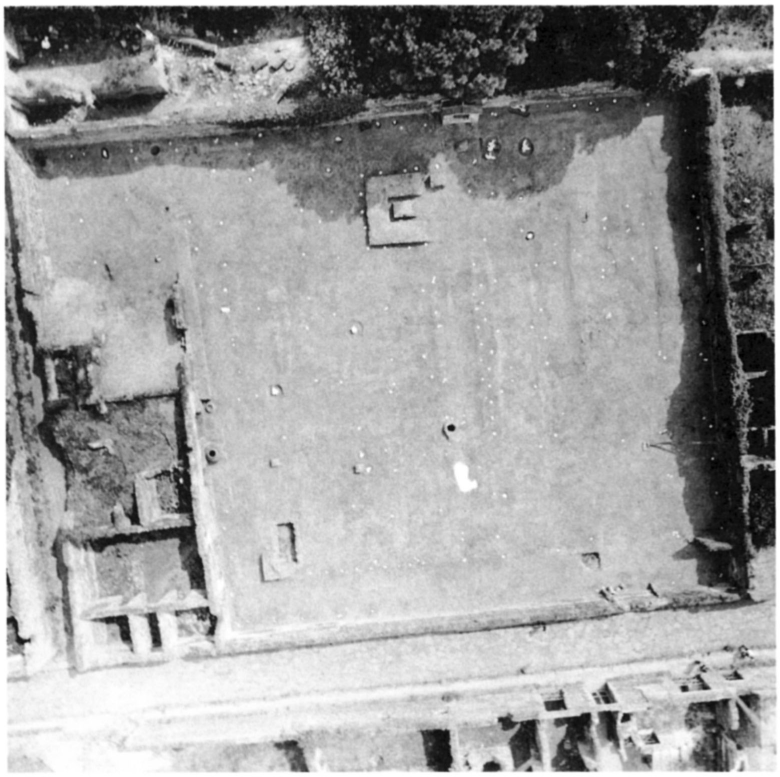


Fig. 1
The Garden of Hercules.
Casts of larger roots painted white;
white disks cover small roots.
(Aerial photo by the
Julian Whittlesey Foundation)

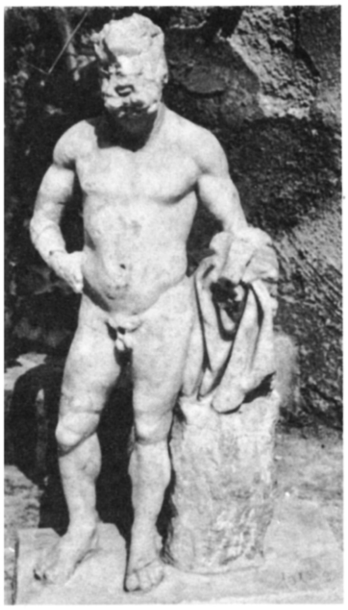


Fig. 2 Statue of Hercules

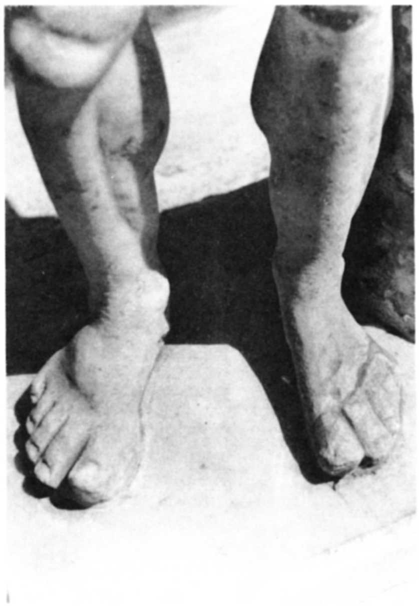


Fig. 3 Statue of Hercules, feet

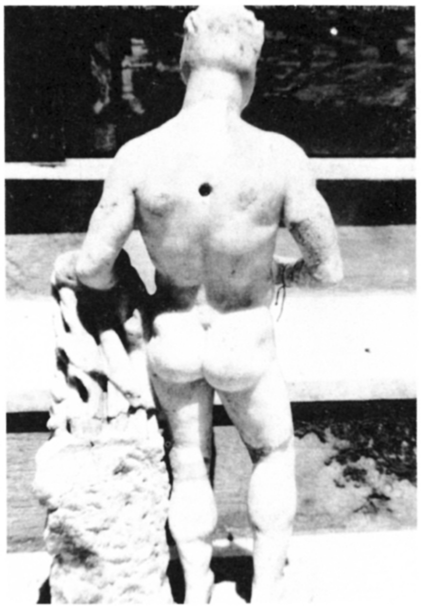


Fig. 4 Statue of Hercules, back

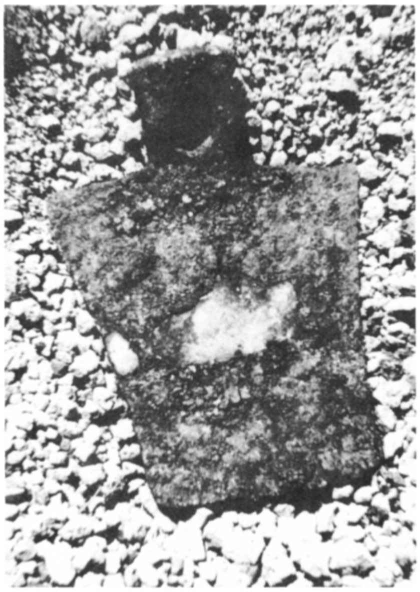


FIG. 5 Ancient hoe (*sarculum*)

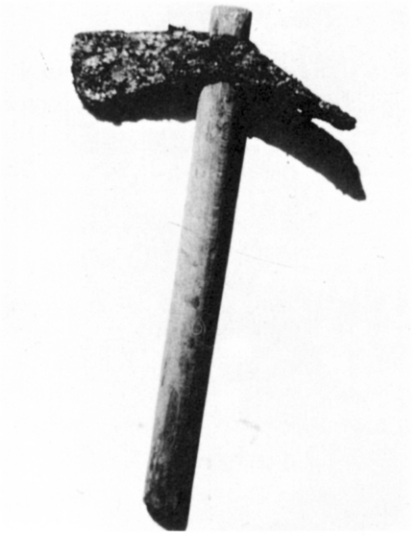


FIG. 6 Ancient *dolabella*

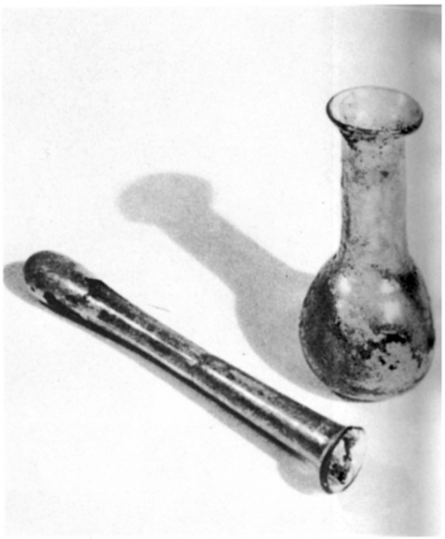
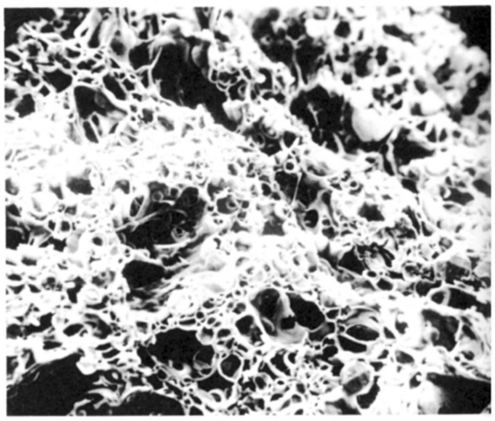


FIG. 7 Perfume bottles of blown glass

FIG. 9
Scanning electron micrograph of pumice particle
showing water pockets, x240



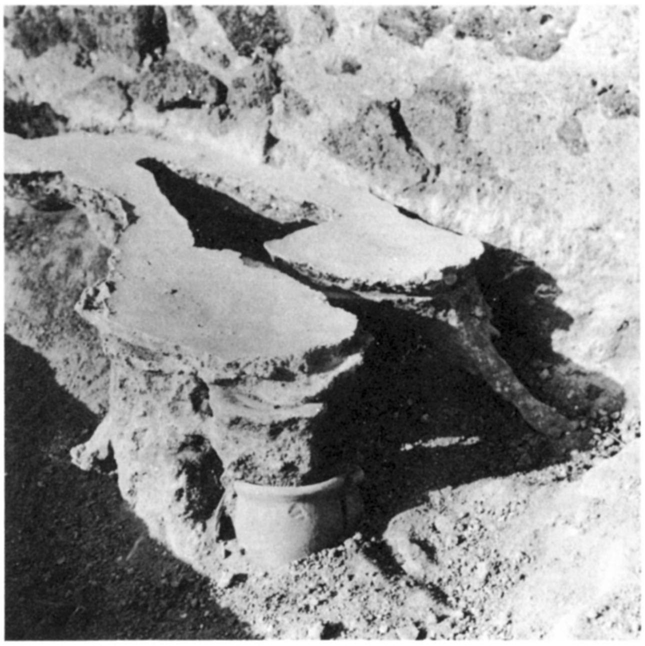


FIG. 8
Cast of tree root
which had grown out of pot

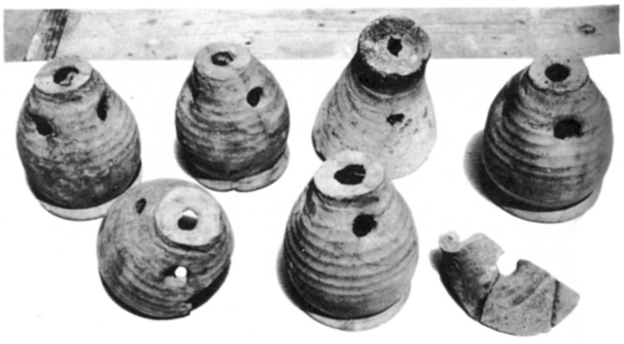


FIG. 10 Restored terracotta pots

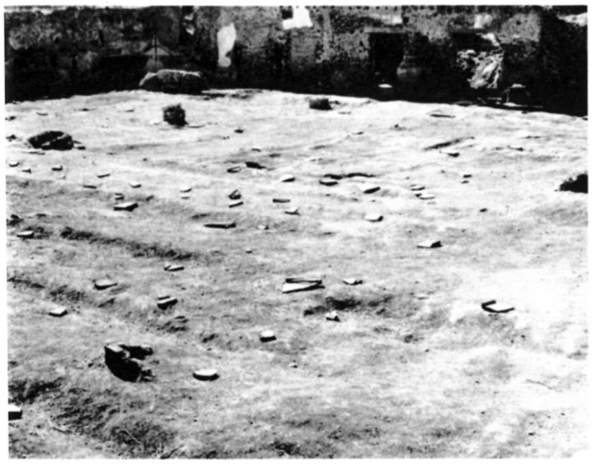


FIG. 11
Planting beds separated by water channels

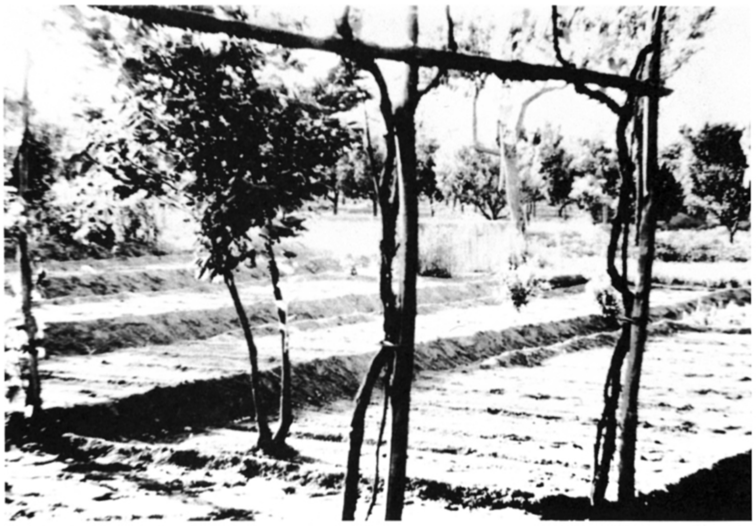


FIG. 12 Planting beds in modern garden

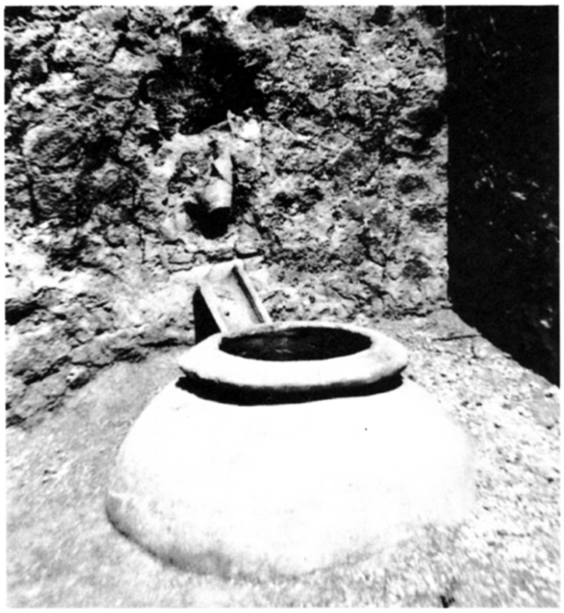


FIG. 13 Amphora tip in wall,
for filling dolium

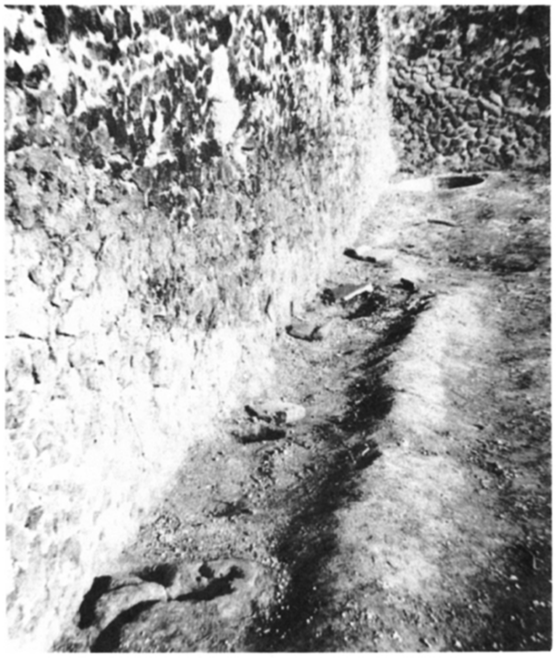


FIG. 14 Water channel along E wall,
S of lararium

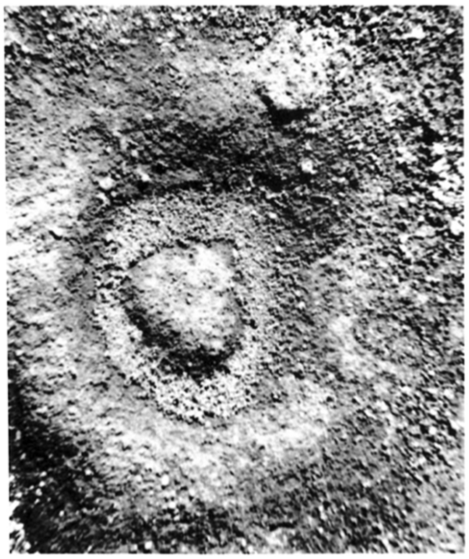


FIG. 15 Depressions for water around plant

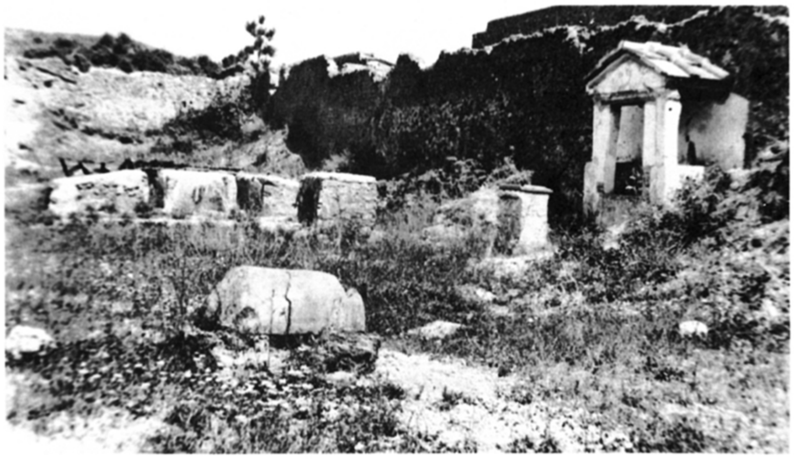


FIG. 16 View with cistern in background

DUMBARTON OAKS COLLOQUIUM
ON THE HISTORY
OF LANDSCAPE ARCHITECTURE

VII

Edited by

ELISABETH B. MACDOUGALL

AND

WILHELMINA F. JASHEMSKI

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The Campanian Peristyle Garden

WILHELMINA F. JASHEMSKI

Pompeii, located in the fertile Campanian plane—in antiquity it bore four crops a year,[1] as it still does today—was a city of gardens and green places. The ancient geographer, Strabo, suspected what scientific soil analyses now show, namely that Campania owed its fertility to Vesuvius.[2] The soil had another important quality. It was well drained, a condition that Pliny had observed.[3]

Hundreds of houses and gardens[4] have been excavated at Pompeii. The gardens in many of the better-known houses have been replanted, and the visitor unconsciously assumes that these are faithful replicas of the ancient gardens. But unfortunately we have little evidence for the way in which these gardens were originally planted. Only careful excavation can give us this information.

If an undisturbed site is excavated, we find the ancient soil contours perfectly preserved, the planting pattern clearly visible. When the trees and plants growing at the time of the eruption died, their roots decayed and left cavities that were gradually filled with the volcanic debris that covered the site. The first step in excavation is the removal of the lapilli until the level of the soil in A.D. 79 is reached and the lapilli-filled cavities are visible. We then empty the cavities with special, long-handled tools, reinforce the cavities with heavy wire, and fill them with cement.

Funds for the University of Maryland excavations at Pompeii and Torre Annunziata were in large part provided by the National Endowment for the Humanities, and in part by the General Research Board of the University of Maryland. Our work has been greatly facilitated by the generous cooperation and gracious hospitality of Alfonso de Franciscis, Superintendent of Antiquities for the Provinces of Naples and Caserta (1965–76); of Fausto Zevi, Superintendent since 1977; of Giuseppina Cerulli Irelli, Director of Excavations at Pompeii; and of Giuseppe Maggi, Director of Excavations at Torre Annunziata, who generously made available the facilities at these sites and also furnished trucks, additional workmen, and other valuable assistance. Domenico Pelli, Chief Assistant at Pompeii, and Ferdinando Balzano, in charge of the *deposito* at Torre Annunziata, gave much valuable help and advice. Nicola Sicigiano was our able and ever helpful foreman.

[1] Strabo 5. 4. 3.

[2] Strabo 5. 4. 8.

[3] Pliny *HN* 18. 110.

[4] For a description, with bibliography, of every garden that has been excavated in the Vesuvian area, see Wilhelmina F. Jashemski, *The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius*, II (New Rochelle, N.Y., forthcoming).

After three or more days the soil is removed from around the cast, and the shape of the ancient root is revealed. If we are fortunate we sometimes find carbonized plant materials and ancient pollen. Unfortunately few excavators have been interested in soil contours, root cavities, or plant remains, and precious evidence that could have been recovered only at the time of excavation has been irretrievably lost. I have been unable to find a detailed excavation report giving such information for even one peristyle garden.

It was rare good fortune when during the excavation of the House of Polybius (IX. xiii. 1–3)[5] at Pompeii it became apparent that the house had a peristyle garden. This venerable Samnite house (Fig. 1) on the Via dell'Abbondanza is one of the oldest and most interesting in the city. The entire house was protected by roofing during excavation (Fig. 2). Toward the rear of the house was the peristyle garden, which the Italians invited me to excavate. This garden, which I excavated in 1973, was the first peristyle garden to be discovered in almost twenty years, and it afforded a rare opportunity to apply for the first time in such a garden the techniques that we had developed for recovering evidence about ancient gardens. The garden was enclosed by a portico on the north, east and south (Fig. 3). Under the portico on the east was a large cistern, which stored the water collected from the roof. This cistern, which down to the time of the eruption furnished the total water supply for the house and garden, is of special interest, for it is the only cistern at Pompeii that has been studied. It can no longer be seen, however, for it has been filled with crossbeams to support the weakened structure above.

As we removed the lapilli and reached the level of the ground in A.D. 79, we found two strange marks that were baffling. When they were fully exposed we realized that they were the outline of a ladder, an exceptionally long and narrow one (8 m. long; 0.5 m. wide at the bottom, 0.3 at the top) such as is used today to pick cherries and pears. It was shaped so as to fit into dense branches. After we had carefully removed the final covering of lapilli we examined the soil under a strong light with a magnifying glass, hunting for seeds or bits of charcoal. We found a small piece of coral 2.2 centimeters long, which had a tiny hand carved on one end, a phallus on the other (Fig. 4). The ancient Romans, ever fearful of the evil eye and the injury that it might work on their persons or property, sought protection through the magic use of amulets in the shape of parts of the body. Our workmen were greatly interested, for we had recently found an enormous tufa phallus on the outside wall of a garden that we had excavated.[6] The next day one of the men brought me a tiny coral hand and a horn. The small coral phallus was available, he told me, but not at his wife's souvenir shop, for its sale was prohibited by both Church and State.

---

[5] Election notices found near the entrance when the facade of the house was excavated in 1913, and later in the interior of the house, led to the identification of the house as that of C. Julius Polybius. The discovery of a graffito and also of a seal, inside the house, with the name of Julius Philippus suggest that Philippus, a freedman of Polybius, may have been the last resident.

Sites in Pompeii are easily located by the system introduced by the archaeologist Giuseppe Fiorelli, who became director of the excavations at Pompeii in 1860. He divided the city into nine regions; each region was subdivided into numbered insulae or blocks, and each entrance in each insula was assigned a number. Thus each door has an address of three numbers.

As we removed the lapilli from near the west wall of the garden we found strange soil formations that had the appearance of large sombreros (Fig. 5). When I examined them I found a root cavity in the center of the heaped up soil; this was surrounded by a water channel (the brim of the sombrero). It was obvious that young plants requiring extra water had been planted in these formations along the wall. We emptied the cavities, filled them with cement, and made casts of them. During the summer of 1978 we pulled the soil away from the casts and then took the casts out of the ground in order to study them better. We found most of the pieces of a complete pot in the soil near the first cast to the south, but part of the pot was embedded in the cast. It was obvious that a young tree had been started in a pot, the pot broken before the plant was put in the soil, and the fragments of the pot had fallen into the planting hole. There were also a few fragments of similar pots in the soil around two other casts. I was not too surprised to find the pot, for earlier, when we had emptied the root cavities, we had found terracotta fragments which I had recognized as coming from pots similar to the ones that we had found the previous year when excavating a large, market-garden orchard at the rear of the House of the Ship Europa.[7] I had previously found two such pots at Pompeii, the first in the House of the Hebrew (I. xi. 14).[8] Later I found an almost complete, but smaller, pot in the soil near the wall in the Garden with the Mosaic Fountains (II. ix. 7) to the west of the Great Palaestra.[9] But I did not understand the use of these pots until I found twenty-eight pots in the large garden of the House of the Ship Europa (I. xv. 3) in 1972. Thirteen of these pots were sufficiently complete to be restored.[10] With one exception, they have a hole in the bottom and three holes on the sides. The pots were found embedded in the soil at varying depths along the walls of the garden.

---

[6] See W. F. Jashemski, "The Excavation of a Shop-House Garden at Pompeii (I. xx. 5)," *American Journal of Archaeology*, 81 (1977), 217–227; and her *The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius*, I (New Rochelle, N.Y., 1979), 188–189.

[7] See W. Jashemski, "The Discovery of a Market-Garden Orchard at Pompeii: The Garden of the House of the Ship Europa," *American Journal of Archaeology*, 78 (1974), 399–400 and figs. 8 and 9; and Jashemski, *Gardens*, I, 238–239.

We next found pots in the Garden of Hercules (II. viii. 6), which appeared to be a large, commercial, flower garden (Fig. 6).[11] One of the pots was left in the soil, for we did not want to destroy the root cavity in taking out the pot. When we pulled the soil away from the root cast the next year, it was impressive to see the cast of a sizeable tree-root growing out of the pot. There was also an empty pot nearby. Apparently the ancient gardener had planted a young tree in that pot but it did not grow, so he planted another a short distance away. The question immediately arises as to the kind of tree that would have been started in a pot. Carlo Fideghelli, of the Istituto Sperimentale per la Frutticoltura, Ministero dell'Agricoltura at Rome, who has made a study of the shape of modern roots, examined our root cavities, also our casts. He believed that this cast had the appearance of that of a lemon-tree root.

Pliny speaks of the citron trees that were imported in pots provided with "breathing holes for the roots" ("fictilibus in vasis dato per cavernas radicibus spiramento").[12] This is a good description of our pots. In the garden of Polybius there were many nail holes in the west wall above the roots, which indicated that the trees had been espaliered. Frank Brown, then Director of the American Academy in Rome when he visited our excavations, suggested that the trees could well have been lemon, a relative of the citron. Lemons fascinated the ancient Pompeians and we find them portrayed in the wall paintings. Lemons are espaliered on garden walls in the Mediterranean today. In the Pompeii area they are started in pots, and they are planted along the walls for protection if at all possible.

---

[8] This pot had a base diameter approximately 7 x 7.5 cm., a large hole (4 cm. in diameter) in the bottom, and four holes about 1.5 cm. in diameter on the sides. The preserved height was 12 cm.

[9] This pot had a base diameter of 5 cm., a hole in the bottom 3 cm. in diameter, and three small holes on the sides. It is 13 cm. high.

[10] The pots are all of coarse clay, and vary from red to black. The largest is 15.5 cm. high, with a base diameter of 6 cm., a mouth diameter of 10.5 cm., and a maximum diameter of 14.5 cm. The smallest is 13 cm. high, with a base diameter of 6 cm., a mouth diameter of 9.5 cm., and a maximum diameter of 10 cm. The pot with five holes is of different shape, fabric, and color. It is apparently a fragment of a small, yellow clay amphora with a round base. The base is 7 cm. in diameter, the height (maximum preserved) is 18 cm., and the maximum preserved diameter is 13.5 cm.

[11] W. Jashemski, "The Garden of Hercules at Pompeii (II. viii. 6): The Discovery of a Commercial Flower Garden," *American Journal of Archaeology*, 83 (1979), 403–411. The largest pot was 14 cm. high, with a base diameter of 6 cm., a mouth diameter of 11 cm., and a maximum diameter of 13 cm. They were found at the bottom of cavities ranging in depth from 16 to 24 cm.

[12] Pliny *HN* 12. 16.

But we were to find more tree-root cavities in the garden of Polybius. The root cavities differed greatly in size and shape (Figs. 7, 8). When we emptied the cavity of the large tree-root in the northwest corner of the garden, we found that it had shallow spreading roots (the longest at ground level visible for almost a meter) and a taproot 38 centimeters deep. When Dr. Fideghelli examined the cavity of this root he said that it had the appearance of a fig-tree root. It was only much later that Frederick Meyer reported that he had finally identified the misshapen chunks of charcoal that we had found around this cavity. When he examined a cross section under high magnification, the many tiny seeds of a fig were clearly visible. The tree-root cavity in the northeast corner had a very different shape, with a taproot at least 52 centimeters deep, and deep lateral roots. It appeared to be the cavity of the root of a fruit tree, perhaps a cherry or pear. The presence of either one of these trees would explain the presence of the tall, slender ladder. The cavity on the south side had the appearance of a young olive tree.[13] When G. W. Dimbleby, of the Institute of Archaeology of the University of London, analyzed soil samples from this garden, he found olive pollen present. When we first found evidence of olive trees in the gardens that we were excavating at Pompeii, we were greatly surprised, for the olive tree is rarely found at Pompeii today. But we have now become accustomed to finding plentiful olive pollen; we have also found carbonized olives at Pompeii.[14] Most surprising was the large branch (180 cm. long) of a tree found preserved at a height of about 250 centimeters in the volcanic ash at the edge of the excavated portion of the rear garden of the luxurious villa at Torre Annunziata. The branch had the appearance of fresh wood, but when Francis Hueber, of the Smithsonian Institution, examined various samples, he found that the cellular structure was almost completely destroyed. He finally treated samples with nitric and chromic acid in combination and was able to isolate and identify some of the still-preserved cells. They were those of an olive tree.[15]

---

[13] The tree-root in the southeast part of the garden had a taproot 30 cm. deep and three pronounced lateral roots. The root in the middle of the west side of the garden was 28 by 34 cm. at ground level with no real taproot, but with a slanting root 44 cm. long and laterals up to 60 cm. in length.

[14] For evidence of the olive at Pompeii, see Jashemski, *Gardens*, I, 210, 248, 257–260, 282–284, 357 (chap. 12, n. 10) and 358 (chap. 14, n. 24).

By the time we had finished excavating the garden of Polybius, we had found a total of five large trees as well as a number of smaller ones, including those in the "sombrero" formations along the west wall (Figs. 9, 10, 11). Some of the smaller cavities were clearly those of stakes, which would have been used to prop limbs heavy with fruits or nuts. Small root cavities in a row along the east edge of the garden and scattered cavities along the south edge of the garden were probably those of shrubs. We were reminded of the myrtle bushes and ivy mounds pictured so often at the base of garden walls,[16] as if to suggest a continuation of the actual plantings in the garden (Fig. 12). This planting would have been the only aspect of the garden that was ornamental.

The dense planting found in the small garden of the House of Polybius suggests that the soil must have been exceptionally fertile, and the soil studies made by John Foss, Professor of Agronomy at the University of Maryland, in this garden and elsewhere, showed that this was indeed true.[17] His tests showed that in addition to the great fertility and the well-drained condition of the soil, which the ancients had observed, the soil had another very important characteristic. It contained large quantities of minute pieces of pumice, which because of its porous nature was able to retain large amounts of moisture and make it available for plants. A scanning electron microscope photograph shows the tiny water pockets in the pumice magnified 600 times (Fig. 13).

Our discoveries in the garden of the House of Polybius raised certain questions concerning the planting of peristyle gardens and the extent to which trees may have been used, especially because all of the restored gardens have been planted with low formal plantings. A thorough search through all the excavation reports showed that root cavities had been reported in very few gardens, and some of these were not peristyle gardens. Spano in 1910 reported finding a large root cavity in a peristyle garden in Region vii (vii. vi. 28).[18] In another garden (vii. vi. 38)[19] he found evidence of randomly planted small trees, or large plants, but he does not give the size or the depth of the root cavities for they were not emptied of lapilli, measured, and studied. In a casual note he also mentions finding tree-root cavities in two corners of the peristyle in the House of the Silver Wedding (v. ii. i),[20] but he gives no indication of their size, shape, or exact location. It is not even clear to which peristyle garden he refers. In 1978, in going through the photograph collection recently assembled at Pompeii, I found an old photograph that definitely locates one of these trees in the northwest corner of the peristyle garden to the rear of the atrium. Maiuri found a large tree-root cavity (80 x 82 cm. at ground level) against the south wall in the little peristyle garden of the House of the Priest Amandus (i. vii. 7).[21] It was obvious that trees were not unusual in peristyle gardens, nor were informal plantings. It became important for us to see if by any chance further information could be salvaged from previously excavated gardens.

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[15] See ibid., 300 and figs. 456, 457; and 312, fig. 483.

[16] As on the garden wall of the House of L. Ceius Secundus (I. vi. 15).

[17] See ibid., 254–256 and Table B for details regarding the soil in the ancient gardens at Pompeii (including the garden in the House of Polybius) and at Torre Annunziata.

I examined all the peristyle gardens that had been uncovered during the last period of extensive excavation (1951–61), for these had been exposed a shorter time to destruction by weeds and weather. In seven of these gardens it was possible to find root cavities. The first of these gardens that we excavated (i. xvi. 2) was enclosed on two sides by a portico supported by eight unusually thick, tufa columns. We found seventeen root cavities ranging in diameter at ground level from 4 to 15 centimeters and in depth from 11 to 33 centimeters. They had a mean diameter of 7 centimeters. The roots were not precisely arranged, but there were three rows running the length of the garden, and two roots in a fourth row (Fig. 14). It is difficult to identify the roots, but they appear to be those of trees, and their size indicates that they were nut or fruit trees.

The following year we excavated the six remaining peristyle gardens. The peristyle garden in the House of the Ship Europa (i. xv. 3) takes its name from the graffito of a ship labled "Europa" found on the north wall of the portico. The peristyle garden, which had been originally excavated in 1957, had been badly damaged, but even so we were able to find root cavities. The planting pattern was an informal one, with all the root cavities save one near the edges of the garden. In each of three corners there was a tree (Fig. 15). A deep hole that had been recently dug in the fourth corner may have destroyed a fourth tree-root cavity. The largest dimension of these cavities at ground level ranged from 18 to 44 centimeters. The nine smaller cavities appeared to be those of grapevines. Only two of the vines had been staked, but today when trees and vines are planted together in a small garden plot, the trees support the vines.

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[18] G. Spano in *Notizie degli Scavi di Antichità*, 5th ser., 7 (1910), 465–473.

[19] Ibid., 446–447.

[20] Ibid., 446.

[21] Amedeo Maiuri, *Pompéi* (Novara, 1956), 112.

The House of the Arches (I. xvii. 4), with its beautiful arched portico on the south and west, and with a painting of a garden with sphinx fountains on the long north wall, had more the appearance of a formal garden, but here too we found informal plantings (Fig. 16). There was a large tree (its largest dimension 45 cm. at ground level), which must have shaded the entire garden, next to the portico on the west, as well as some smaller trees and shrubs. The southwest part of the garden had been destroyed at the time of the eruption, probably by the collapse of the top of the cistern below, so no cavities were preserved there. Enough of the planting pattern had been preserved, however, to give the impression of a charming informal garden.

The porticoed garden of a house (I. xii. 8) that had been converted to commercial use connected with the popular fish-sauce industry had two badly preserved garden paintings on the rear wall, but water brought out their original beauty. Here we found the cavities of two large tree-roots that had the appearance of those of fig trees, as well as a number of smaller ones (Figs. 17, 18). The small cavities were those of shrubs or herbs. When Dr. Fideghelli saw the latrine in the corner of the garden, he commented that customs had not changed. In southern Italy, country people still plant a fig tree near their latrine. The low shady branches provide privacy, and the large fig leaves serve as a substitute for toilet tissue.

The garden in a modest house (I. xi. 6) on the Via dell'Abbondanza had a portico on the east and garden paintings on the south and west walls. A large picture window in the north wall permitted a fine view of the garden from the entrance. It was in this house that the statuette of "Venus in a bikini" was found on a table in the atrium, directly in line with the Venus painted on the rear garden wall. There were only eleven cavities in this little garden, ranging from 1.5 to 6.5 centimeters in diameter, and they tended to be at the edge of the garden. Apparently a few ornamental shrubs or flowers had been planted along the edge. A peristyle of a more public nature was found in the so-called House of the Sibyl (II. I. 12), where the worshipers of Zeus Sabazius gathered to worship.[22] Here a row of four trees furnished shade (Fig. 19).

The planting pattern of the garden in the small house (I. xii. 11) directly across the street from the House of the Ship Europa was very different from anything that we had yet found. The little garden was enclosed by a portico on three sides and had a huge animal-painting on the rear wall. It had obviously been planted with small shrubs laid out in a very formal design. The root cavities ranged in size from 2 to 4 centimeters in diameter. There were only two breaks in the design: at the rear of the garden on the west there was a hole where a small portion of the roof of the cistern had collapsed, and on the east recent digging had destroyed two root cavities (Fig. 20). In the center of the garden was a small statue-base framed by the plantings which were undoubtedly evergreen, most probably clipped box (Fig. 21). It was by now quite certain that many old houses at Pompeii continued their informal, old-fashioned plantings until the city was destroyed in A.D. 79. But there were also the more formally laid out gardens.

The more generous use of water made possible by the introduction of the aqueduct at Pompeii during the time of Augustus, greatly altered the appearance of the Pompeian garden. Earlier, plantings requiring a minimum of water were used. Trees were a natural choice, for they needed water only until they had become well established. When water was readily available after the aqueduct was built, pools and fountains were introduced, adding great charm and variety to many gardens. The pool became a natural focal point that greatly influenced garden design. Pools varied greatly in size and shape. Some were so large that they occupied a good part of the garden area and formed the dominant feature of the garden.[23]

The deep pool (2 m.), its interior painted with water-plants and fish, in the House of Pansa (VI. vi. 1) left little space for plantings. The larger and more ornate pool, its interior painted blue, in the House of Meleager (VI. ix. 2) was surrounded by plants. A large pool in the House of the Golden Cupids (VI. xvi. 7) left considerable space for both garden sculpture and plantings. The largest pool was in the middle peristyle of the House of the Citharist (I. iv. 5/25). Most pools were smaller and left more room for plantings, as the shallow pool in the first peristyle of the House of the Faun (VI. xii. 2/5).

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[22] See Jashemski, *Gardens*, I, 135–137.

[23] See ibid., 41–43 for a brief description of each of the large pools at Pompeii.

The pool was by no means the central feature of every garden. The Pompeians delighted in adorning their gardens with small garden sculptures (Fig. 22). Most were white marble; bronze is occasionally found, more rarely colored marble. Much of this sculpture, in subject matter and style, shows Hellenistic influence; but on occasion we see the influence of archaic or classical Greek originals. No garden had as many sculptured fountains and garden ornaments as the House of the Vettii (VI. xv. 1).[24] The house had been ransacked for valuables after the eruption, but fortunately the garden had been left untouched. Water from a dozen fountain-statues, placed on bases located between the columns of the portico, jetted into eight marble basins. There were two additional fountains within the garden. The lead pipes were so well preserved that little repair was necessary to bring the system into working order, and until recently the fountains again played in the summer sun.

During the last years of the city a showy type of mosaic fountain became popular (Fig. 23).[25] The first fountain of this type was found in a house on the Via di Mercurio in 1826 and the house (VI. viii. 22) became known as the House of the Great Fountain. The fountain, which completely dominated the garden, was obviously much prized by the owner. The bronze fountain-statue of a boy holding a dolphin that today is displayed in this pool was, however, found in another garden.

M. Lucretius, priest of Mars and decurion of the city, had a brilliantly decorated mosaic fountain at the center of the rear wall of his small raised garden. Lucretius and his guests enjoyed a fine view of the garden through a wide, open window from the dining room. None of the small sculptures which decorated his garden would rank as great works of art, but set among the greenery with the smallest ones half hidden and the garden enlivened by the sound of water cascading down the water-steps or falling back into the pool from the center jet, the effect must have been one of extraordinary pleasantness.

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[24] See ibid., 35-38.

[25] See ibid., 41-43 for a description of the various mosaic fountains found in the Vesuvian area.

The charming practice of making a small garden appear larger by painting a picture of a garden on one or more garden walls was a common one at Pompeii (Fig. 24). Behind a low painted fence, flowering shrubs and trees appeared to grow in profusion, and statues and fountains too large for the actual garden could be enjoyed (Fig. 25). Little attention has been paid to these garden paintings, overshadowed as they are by the more pretentious wall decoration within the house, but they contain some of the most delightful painting preserved by Vesuvius. Garden paintings were the work, in some cases, of men of considerable talent, if not great training, who sold their work "by the foot" realizing full well that it would not last, exposed as it was to the weather. But when it faded there would be another contract. Through the years I have catalogued all such paintings that could be salvaged, and my husband has photographed them.[26] Many are no longer in existence.

Attention has been focused thus far, for the most part, on the larger houses at Pompeii. But the little houses are many, and each one takes on a unique character as we examine it. Some had small peristyle gardens, others only small courtyard gardens.[27] One of the most attractive is a little house (I. xii. 16) just off the Via dell'Abbondanza. The first thing that the visitor notices as he stands at the entrance and looks through the house is the painting of a garden on the rear wall (Fig. 26) showing a fountain splashing and a bird drinking from the fountain. Trees and flowering shrubs are depicted behind a low painted fence. It was only after I went into the house that I discovered a real garden in front of the painted one. It is L-shaped and extremely small, less than 0.5 by 2 meters (Fig. 27).

Many gardens had huge paintings of almost life-size animals, which are rather startling if come upon unawares. The best-preserved animal painting (Fig. 28) is on the back wall of the garden in the House of L. Ceius Secundus (I. vi. 15). On either side is a painted fountain supported by a sphinx; on the wall of the small room on the left is a painting of a nymph fountain in a garden setting. An owl perches on one of the shrubs (Fig. 29). Great estates on which wild animals roamed were owned by wealthy Romans both in Italy and the provinces at the time of the eruption of Vesuvius. That which great personal wealth made possible for a citizen in the Italian countryside or in the provinces, the modest inhabitant of a town such as Herculaneum or Pompeii could suggest through the illusion of the painter's brush. It seems very natural and charming to see the apparent size of a modest garden extended through a garden painting. But if the owner had greater aspirations he might suggest that the painter include in his garden's decorations, not only fountains, trees, birds, and flowers, but lakes and streams set in a mountain landscape through which wild animals roamed in profusion. Or he might choose to have a well-stocked fishpool painted on his garden wall. In the small triangular peristyle in the Villa of Diomede, outside the Herculaneum gate, such a pool was painted above the actual pool and seemed to extend it (Fig. 30). The painting is now destroyed, but the early excavators fortunately made a drawing of this pool which was shown well-stocked with sea animals.

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[26] See ibid., II, Appendix 2, for a description and bibliography of all the known garden paintings in the Roman Empire.

[27] The houses at Pompeii and Herculaneum can be divided into two categories: the atrium-peristyle house or its variants, and houses having a more irregular plan. The former may have an atrium and a peristyle, only an atrium, or only a peristyle. Some of the larger homes had two atria and two or more peristyles, or sometimes a garden plot at the rear. Gardens might have porticoes on one, two, three, or four sides. These houses were not as universal as has been thought. Approximately 240 such homes in the area have been excavated thus far. Some of these were very small.

By A.D. 79 many a villa owner had incorporated all the luxuries of a peristyle townhouse into his country villa. One of the most luxurious Campanian villas known was that of L. Calpurnius Piso at Herculaneum.[28] It was explored, by tunneling, by the Bourbons in the eighteenth century, and the spectacular collection of statues that adorned its gardens is now beautifully displayed in the Museo Archeologico Nazionale in Naples. The villa cannot be seen today, but it has been faithfully reproduced, with its gardens carefully planted, by J. Paul Getty at Malibu, California.

The excavation of the luxurious villa at Torre Annunziata has afforded a unique opportunity to discover, in a way hitherto impossible, the actual character and appearance of the gardens in a villa. I began to excavate the gardens in this villa in 1974. Thus far twelve remarkable gardens have been found, and, with the exception of one notable pair, each one is different from all others (see plan, Fig. 31).[29]

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[28] See Jashemski, *Gardens*, I, 322, 326–328.

[29] Ibid., 289–314.

The peristyle garden in the original section of the villa had a sturdy masonry fountain. Adjacent to it we found the cavity of an enormous tree root (Figs. 31, 32). Two carbonized chestnuts found in the lapilli at the height of the ceiling beams may well have fallen from the tree during the eruption and may give us the identity of the tree. This large tree would have completely shaded the peristyle garden. The evidence for trees in peristyle gardens continues to accumulate. The large tree which Statius reported[30] in the heart of the villa of Manlius Vopiscus at Tibur was obviously not as unusual as some have thought. Horace's comment about "nursing trees amid your varied columns"[31] takes on new meaning.

On the main axis of the villa, at the rear of the atrium, was a courtyard garden. The east and west walls of this garden were decorated with paintings of gardens, the low walls on the north and south with plant motifs and birds. We found a sizeable tree-root cavity in each of three corners of this garden (Fig. 31). There was no cavity in the fourth corner, for that would have blocked the entrance to the garden.

Two small courtyard gardens in the east wing of the villa, built during the imperial period, open off the sides of the large room in this wing. There is a beautiful vista looking through the garden on the south to a little jewel of a raised garden beyond. We found no root cavities in this tiny garden, which would indicate that the plants were herbacious, or perhaps potted plants were rotated in the garden. In the garden painting on the rear wall of this little garden is a graceful footed fountain set in a thicket of myrtles. On the right wall an amusing bird sits on a myrtle bush. One of the most beautiful panels in the north-courtyard garden pictures an urn-shaped fountain with a handsome peacock, preening himself, on the edge. It was in this small garden that we found the bones of two dormice.

The peristyle garden (with colonnades on three sides) to the east of the main entrance of the villa is one of the most exciting that we have excavated (Fig. 33). Here, at the edge of the garden, near the columns, we found two rows of root cavities outlining the three sides of the portico (Fig. 31). Except for necessary adjustments at the corners, the cavities were directly in front of the columns. In most of the cavities we found evidence of terracotta pots. Those missing or badly damaged were in locations where holes had been made for the posts placed to hold the scaffolding used in erecting the fallen columns. But the big surprise came in 1978 when we began to pull the soil away from the root casts. We found in the row nearest the columns, at most locations, not one pot, but two. These pots were very like the ones that we found in the informally planted garden in the house of Polybius and in the large commercial gardens at Pompeii. But this garden was a formal garden dating from the last years of the existence of the villa. I again searched the ancient authors for any mention of pots or for any hints as to what might have been grown in them. The reference in Pliny to pots with "breathing holes for the roots" has been mentioned. Cato says that figs, olives, pomegranate, quince, and all other fruit trees, also laurel, myrtle, and planes can be rooted by simply pulling over a shoot and covering it with soil, but he does add that for more careful layering, baskets, or pots that have holes in them, should be used.[32] Pliny recommended starting layers in pots or baskets if they were to be transported a considerable distance.[33]

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[30] Statius *Silvae* I. 3. 59.

[31] Horace *Epistulae* I. 10. 22.

The size of the root-casts in the pots buried in the ground in front of each column indicates that these pots contained either very large shrubs or small fruit trees of the size usually found in the area today. Dr. Fideghelli believes that the fact that they were started in pots indicates that the plants were evergreen. Most fruit trees would have been grafted. Today they are transplanted dryroot during their dormant period from November to March. Dr. Fideghelli points out that citrus trees, which are evergreen, are planted in pots today. He believes that the root cavities are quite possibly those of lemons or citrons. It is also possible that evergreen shrubs were planted in the pots, but the root cavities appear too large to be those of myrtles. The oleander, another evergreen plant, is a native plant of Campania and is never started in pots. The laurel was often used in gardens, but it, too, is easily propagated. The pots may have been used for exotic or difficult-to-grow plants. It is hoped that future excavations, perhaps elsewhere, will help us to answer this question.

I have made a considerable effort to find out if pots had been found at other sites. I thought immediately of Dorothy Thompson who first found pots in the Garden of Hephaistos, above the Agora in Athens.[34] John Hayes told me of finding fragments of six pots at a kiln site at Prima Porta that was hurriedly excavated by the British School at Rome when it was exposed briefly during road-work. It was most exciting to learn that pots similar to those that we have found have been discovered in the peristyle gardens in the winter palaces of Herod at Tulu Abu el-Alayik, two kilometers southwest of Jericho.[35] Letters to other archaeologists who have excavated at sites where peristyle gardens have been found, in all instances brought replies that no pots had been found. This raised the possibility that the pots had been used for plants that could be grown only in the Mediterranean. But perhaps it was an accident of preservation that no pots had been found in the provinces farther north.

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[32] Cato *De agricultura* 51–52.

[33] Pliny *HN* 17. 97.

John Hayes later wrote me about the publication of ten pots found in Eccles, Kent.[36] These have a hole in the bottom and three triangular holes on the sides. The excavator knew of no published parallels and explained the pots as covers for a light, or perhaps a candle. He pointed out that no care had been taken to finish their bases which were neither smooth nor flat, as if the pots had not been expected to stand on them. These pots were found in backfill, and they can be dated as not later than A.D. 65. G. W. Dunning published two similar pots found in Watling Street, London.[37] He identified them as chimney-pots, possibly medieval, but they can now be regarded as Roman. Tran Tam Tinh has more recently found pots like those at Pompeii and at the villa at Torre Annunziata in Herculaneum.[38]

But what had been planted in the second pot, which had been placed in a tipped position directly in front of each column? There were two tiny cavities, too small to have been filled with lapilli but still well preserved, at the edge of each of these pots (Fig. 34). The plants which grew in the pots had small roots and appear to have been vines for the plants were directed toward the column. The Romans had few ornamental vines and showed a decided preference for evergreens. Ivy was the one most frequently used. Because of the ease with which ivy is propagated, it seems strange that it would have been started in pots, unless the quantity needed to plant the garden made it necessary to buy potted plants from a nursery. It is tempting to speculate that the effect desired was that which excited the admiration of Cicero, in his description of the work of his brother's landscape gardener (*topiarius*): "He has so enveloped everything with ivy, not only the foundation walls of the villa, but also the spaces between the columns of the promenade, that I declare the Greek statues seem to be in business as landscape gardeners, and to be advertising their ivy."[39]

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[34] Dorothy Thompson, "The Garden of Hephaistos," *Hesperia*, 6 (1937), 396–425; and her *Garden Lore of Ancient Athens*, Excavations of the Athenian Agora Picture Book no. 8 (Princeton, 1963), figs. 11–14.

[35] E. Netzer, "The Hasmonean and Herodian Winter Palaces at Jericho," *Israel Exploration Journal*, 25 (1975), 92. For pots in the sunken garden see ibid., 99; also J. L. Lelso and D. C. Baramki, "The Excavation of New Testament Jericho," *Annual of the American Schools of Oriental Research*, 29–30 (1955), 17.

[36] A. P. Detsicas in *Antiquaries Journal*, 54 (1974), 305–306.

[37] G. W. Dunning, "Medieval Chimney-pots," in *Studies in Building History*, Edward M. Jope, ed. (London, 1961), 83–85.

[38] Tran Tam Tinh has kindly supplied me with information about the pots that he found at Herculaneum, in a letter dated February 20, 1979.

And what of the plantings in the center of the peristyle garden? The soil there was built up slightly to form a bed, outlined in a somewhat serpentine fashion. Since we found no root cavities, it seems reasonable to assume that this bed was planted with herbaceous plants. The *viola* is the bedding plant most often mentioned by the ancient authors, who had a special word for a bed of violets. They called it a *violarium*.[40] We still have a problem as to the specific flower grown, for the Romans gave the name *viola* to several different flower species. But of these, only the stock (*Matthiola incana* L.) was grown as a garden flower. It grows to a height of one or two feet, and has white, flesh-colored, or lavender flowers that are wonderfully fragrant.[41]

The plantings, which were such an important part of the Campanian garden, have left little tangible evidence. A thorough search for all the references made by the ancient authors to garden plants yields limited but important information. But these references, together with the archaeological evidence, help us to reconstruct the actual plantings. The ornamental plants that are mentioned most often by the Latin authors are ivy, clipped box, laurel, myrtle, acanthus, and rosemary. These are most often mentioned in connection with villa gardens. The Pompeian garden was primarily a green one. The major plants were evergreen, producing beautiful gardens the year round. There were formal beds,

[39] Cicero *Epistulae ad Quintum fratrem* 3. 1. 5.

[40] Varro *De re rustica* 1. 35. 1.

[41] See Jashemski, *Gardens*, I, 271, 296.

their edges outlined, perhaps, with clipped box. Among the greenery, in season, would be the profusion of the dainty white flowers of the myrtle, the greenish-yellow blossoms of the ivy, the white clusters of the viburnum, the daisy chrysanthemum, the stately Madonna lily, and accents of color when the rose, the violet, the poppy, and the iris were in bloom. The rose, the lily, and the violet are the flowers most frequently mentioned.[42] The rose of Campania was especially famous, and we can be sure that it was found in Pompeian gardens. But flowers played only an incidental role in these gardens.

In addition to the literary evidence, the garden paintings that decorated many a garden wall help us to identify the plantings, for they picture actual gardens.[43] The distinctive features in the paintings of gardens are those that we know so well from the actual gardens: the same fences, the same crater and centaur fountains. They picture the masks hanging between the columns as we can see them today in excavated gardens. The birds pictured are also those of the Campanian countryside. The plant material is painted with great effect, but for the most part not too carefully or distinctly, for most garden paintings suggest a luxuriant wild garden that stretches far into the distance, one in which only a few trees or bushes in the foreground are painted more-or-less distinctly. The date-palm is pictured often, and Pliny confirms that it was grown as an ornamental, even though the fruit did not mature in Italy.[44] It is still grown in Italian gardens. The shrub most often pictured is the oleander, with its narrow pointed leaves and red blossoms. It is seldom mentioned by the ancient authors, but Pliny does give directions for growing it, both by layering and by seed,[45] which suggests that it was regularly planted. The Greek herbalist, Dioscorides, knew it as a wild shrub growing along the sea and along rivers, but he also knew it as an ornamental shrub in gardens.[46] The remarkable preservation of bits of branches of the plant that grew behind one of the statue bases along the swimming pool in the east garden of the villa at Torre Annunziata made it possible for Dr. Hueber to identify this plant as the oleander. When he examined the plant fragments retrieved from the cavity in the still-unexcavated bank of volcanic ash that had covered the site, he found that the cellular structure in the branch had been preserved by precipitation of calcium carbonate in the empty spaces of the wood, and that subsequent to the filling of the cells their walls were degraded and lost through fungal and/or bacterial activity. What is seen in the preserved samples are the calcium carbonate replicas of the individual wood cells and the pits and pores that served to interconnect them (Figs. 35, 36). In addition to the oleander there were the myrtle, the laurel, and the viburnum. Low flowers can be seen in painted gardens, just beyond a fence or peeking through the fence; roses, daisylike flowers, Madonna lilies, poppies, and clumps of ivy are found in some paintings. The wild poppy crept into garden paintings, as it did, no doubt, into ancient gardens.

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[42] Ibid., 54, 271; and Pliny *HN* 21. 131.

[43] For evidence that the garden paintings pictured actual Campanian gardens see Jashemski, *Gardens*, I, 80–82.

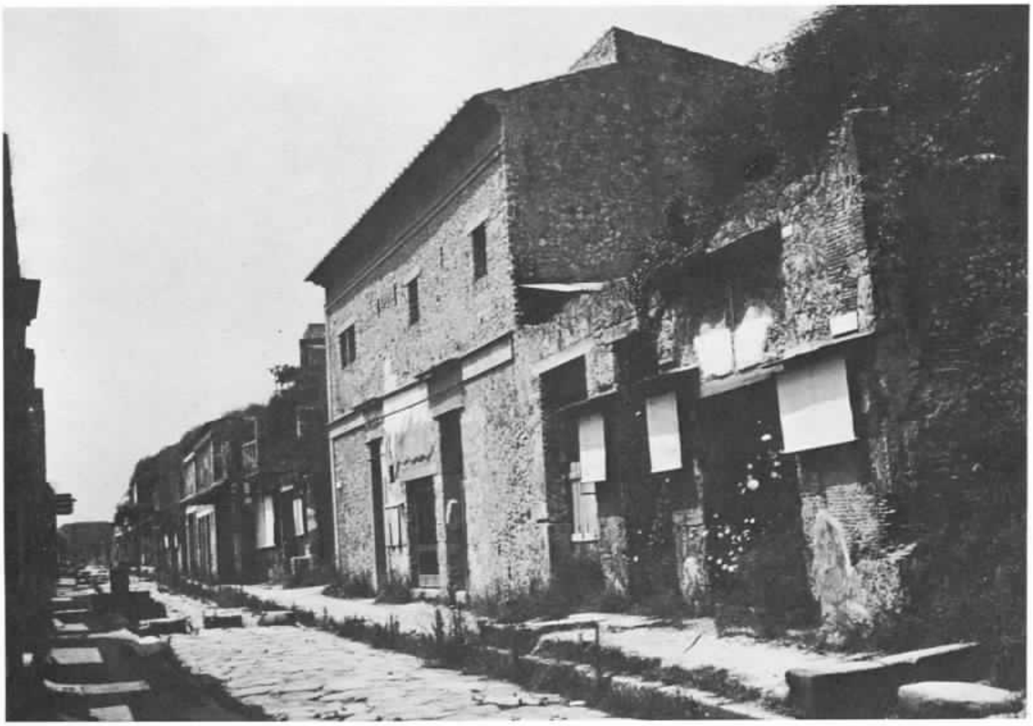
[44] Pliny *HN* 13. 26–27.

[45] Pliny *HN* 17. 98.

[46] Dioscorides 4. 82.

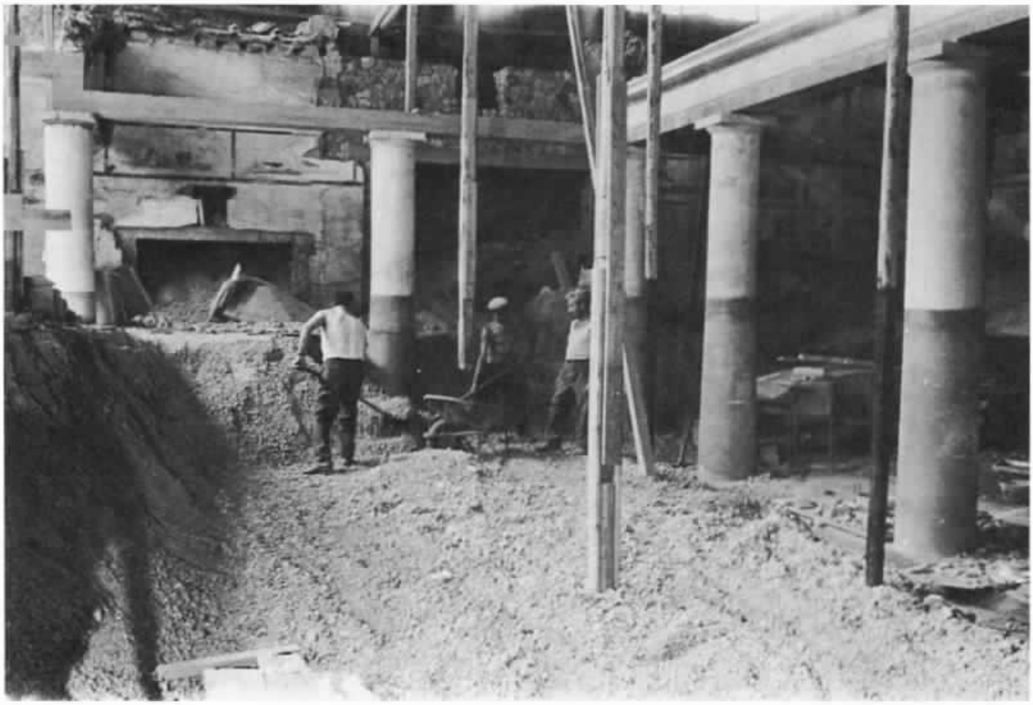
The peristyle garden, regardless of its size or character, was the heart and center of the house. Our excavations have shown that it was not at all unusual, even in the last days of the city, to find a peristyle garden planted in the old-fashioned manner, with large trees and perhaps a few shrubs. But after the aqueduct made water readily available, the use of pools, fountains, low formal plantings (which required more water), and statuary completely changed the character of many gardens. In fact, precious aqueduct water in the home appears to have been piped primarily into the garden—eloquent testimony to the importance of the gardens to their owners.

Much has been written about the Roman character. It is customary to dwell upon the intrigues of the court, the enthusiasm of the Romans for the amphitheater, their delight in spectacles and violence. A study of the homes in which people lived enables us to discover other aspects of their lives. In assessing the Roman character, it is well to remember the inhabitants of the homes and villas of Campania, for whom a love of gardens and flowers was an integral part of their lives.

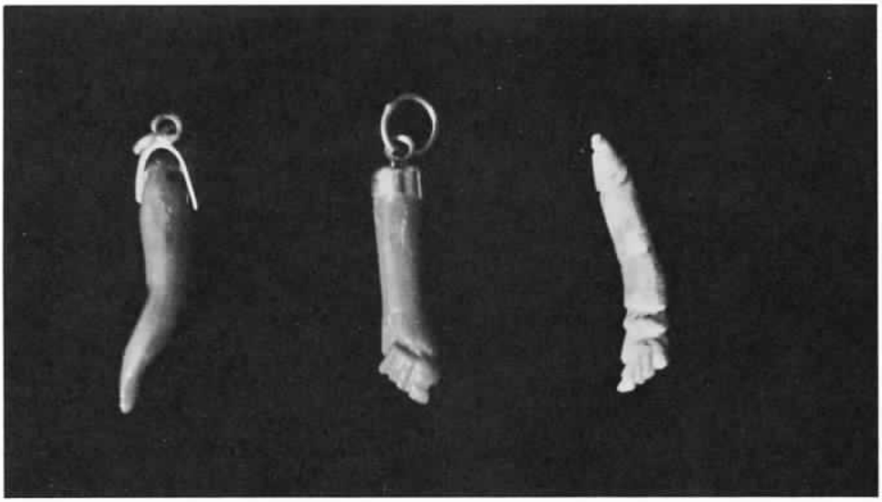


1. House of Polybius on the Via dell'Abbondanza (IX. xiii. 1–3) (photo: Stanley Jashemski)

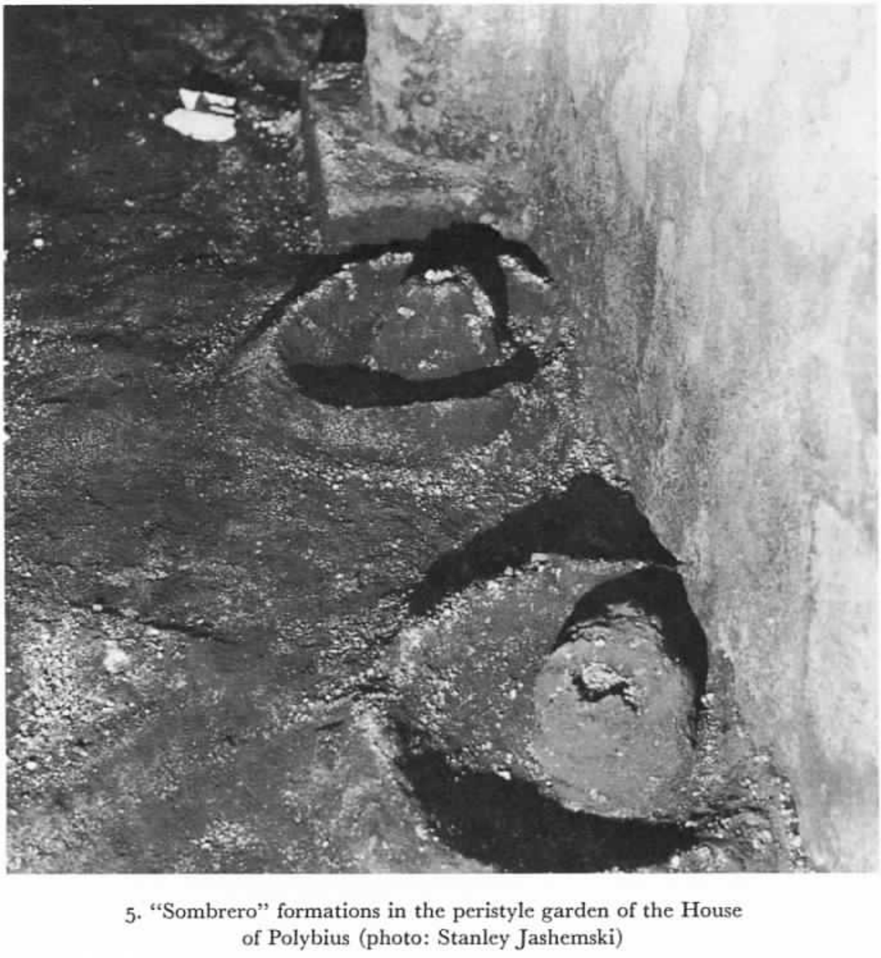
2. Roof covering the House of Polybius during excavation (photo: Stanley Jashemski)



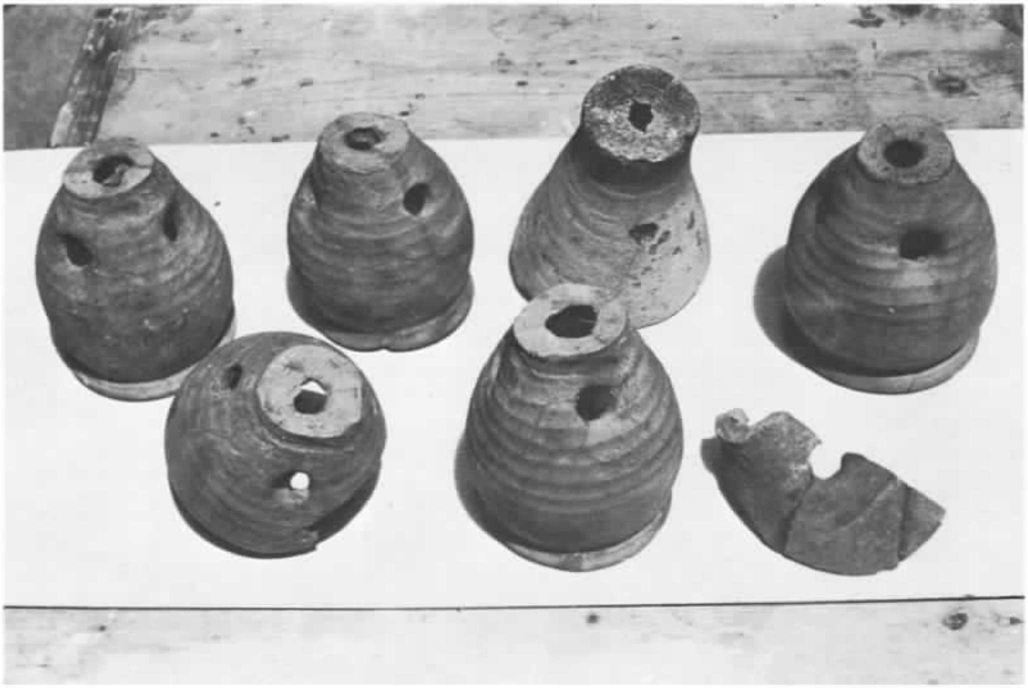
3. Excavating the peristyle garden in the House of Polybius (photo: Stanley Jashemski)



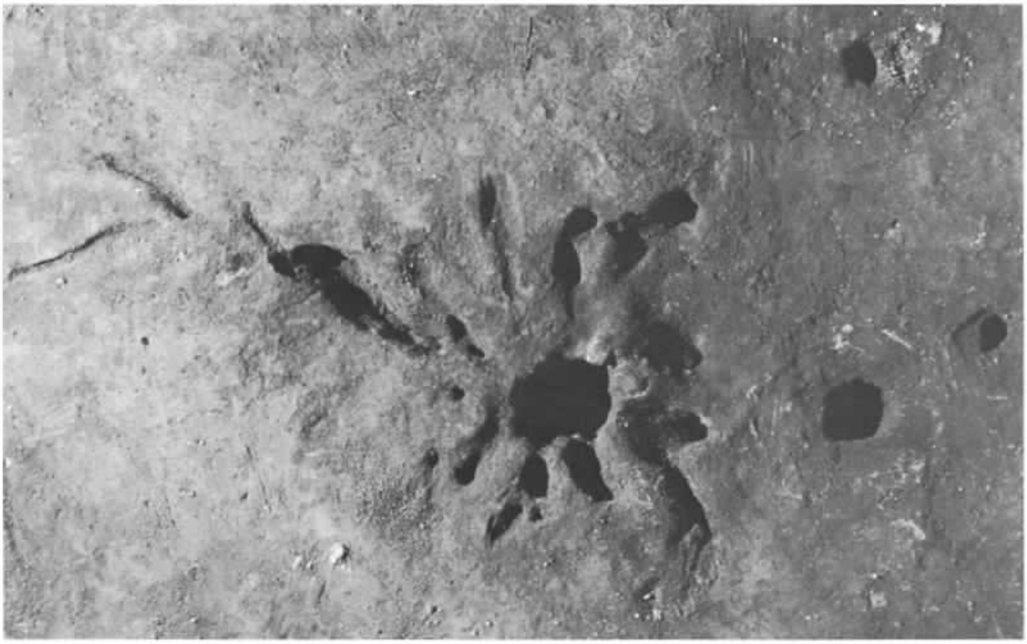
4. Modern amulets, and coral phallus and hand (photo: Stanley Jashemski)



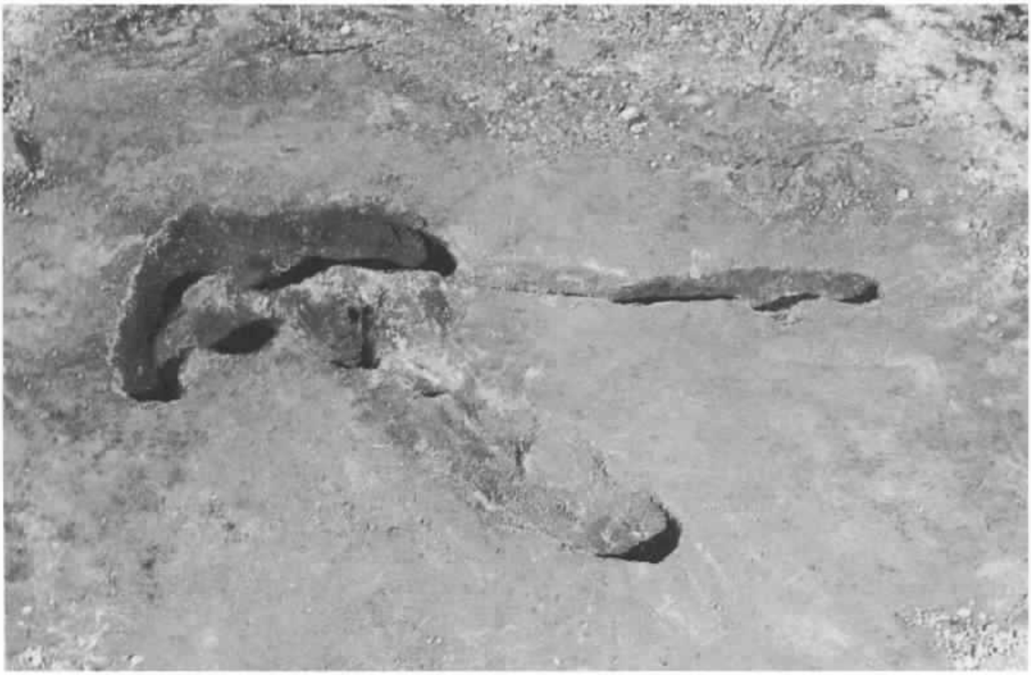
5. "Sombrero" formations in the peristyle garden of the House of Polybius (photo: Stanley Jashemski)



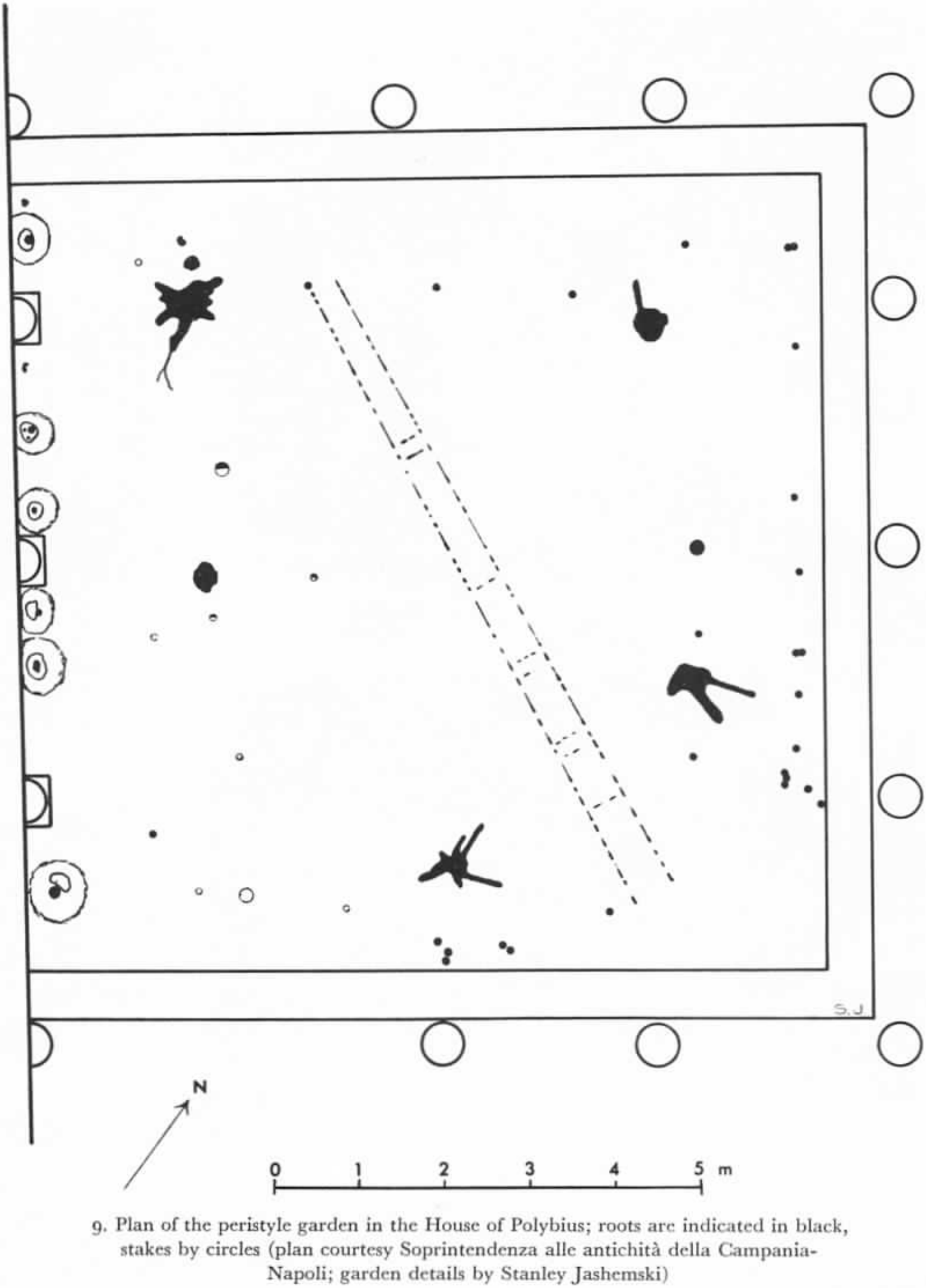
6. Terracotta pots with four holes, Garden of Hercules (II. viii. 6)
(photo: Stanley Jashemski)



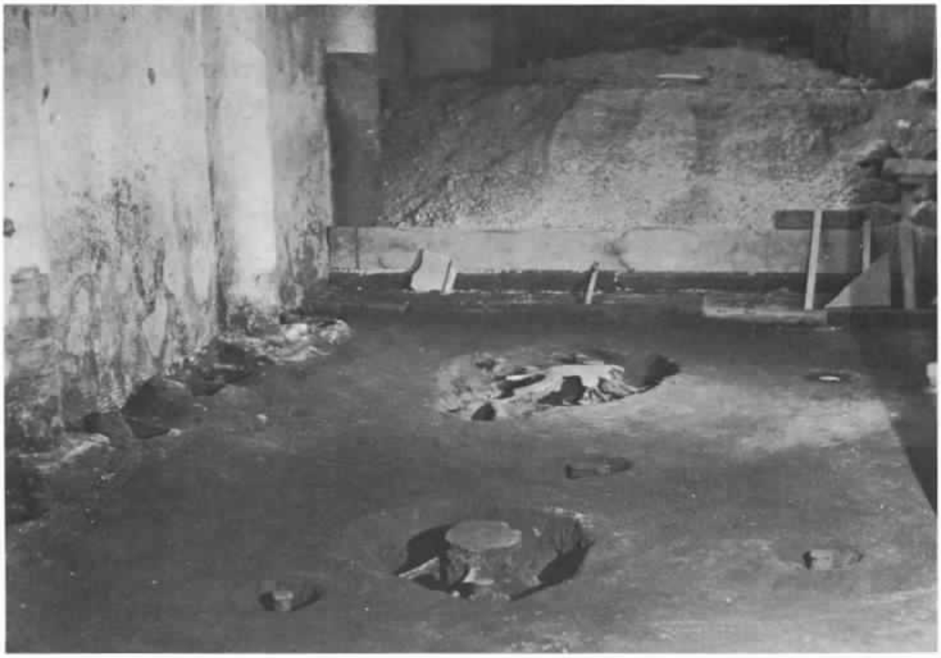
7. Cavity of the tree-root in the northwest corner of the peristyle garden of the House of Polybius (photo: Stanley Jashemski)



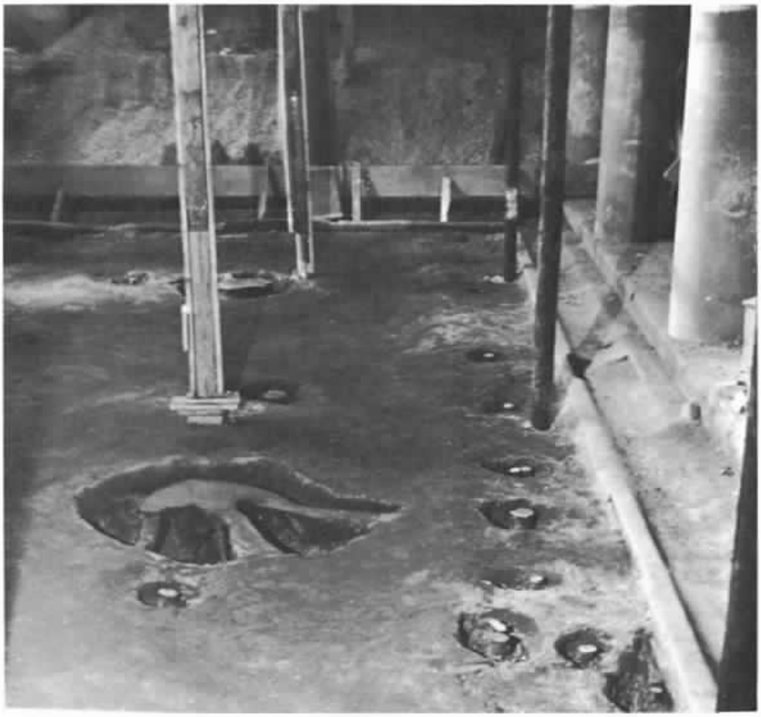
8. Cavity of the tree-root in the southeast part of the peristyle garden of the House of Polybius (photo: Stanley Jashemski)



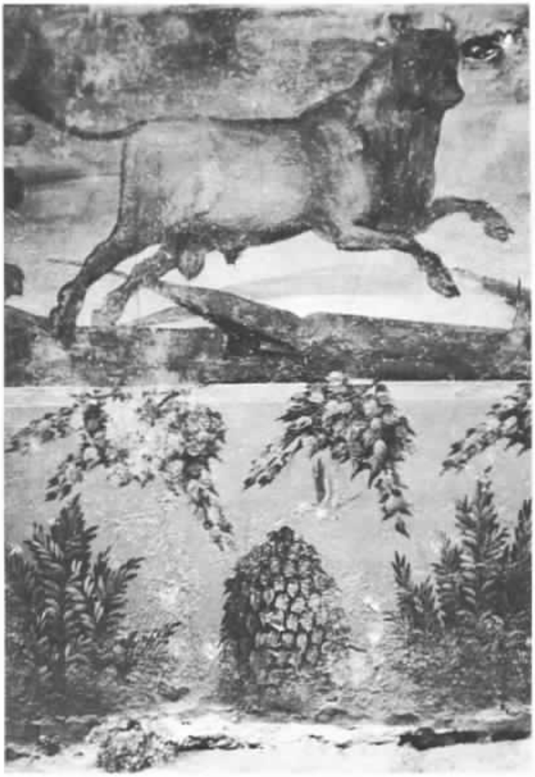
9. Plan of the peristyle garden in the House of Polybius; roots are indicated in black, stakes by circles (plan courtesy Soprintendenza alle antichità della Campania-Napoli; garden details by Stanley Jashemski)



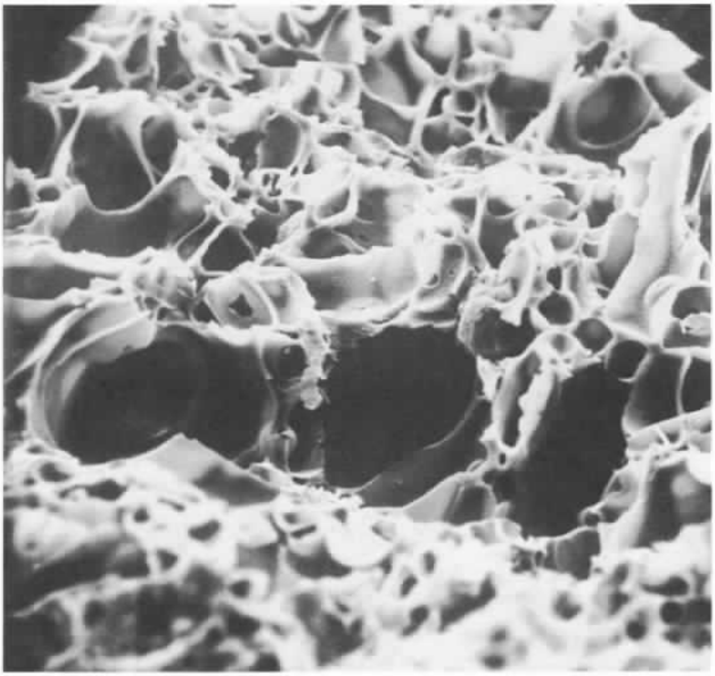
10. West part of the peristyle garden in the House of Polybius (photo: Stanley Jashemski)



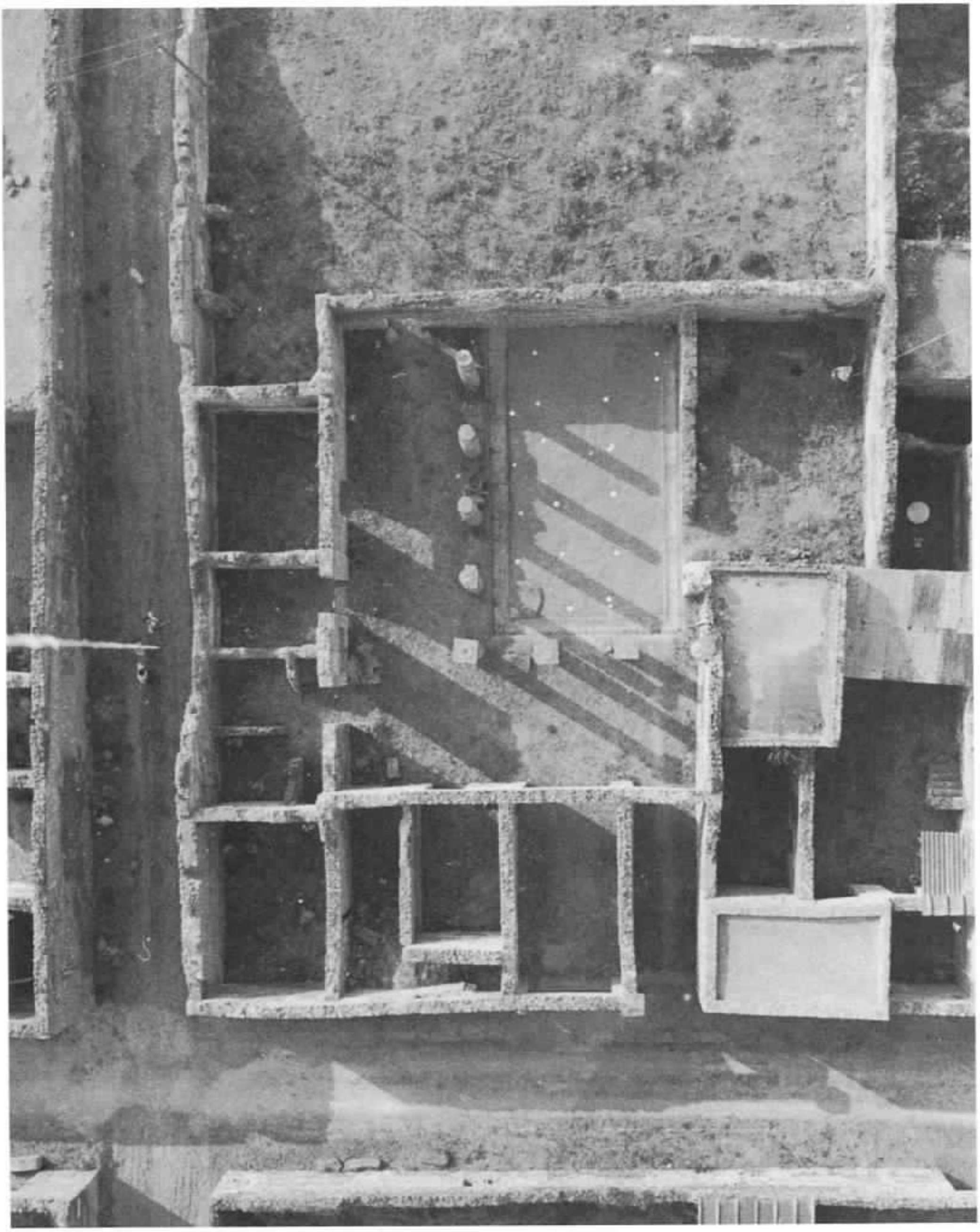
11. East part of the peristyle garden in the House of Polybius (photo: Stanley Jashemski)



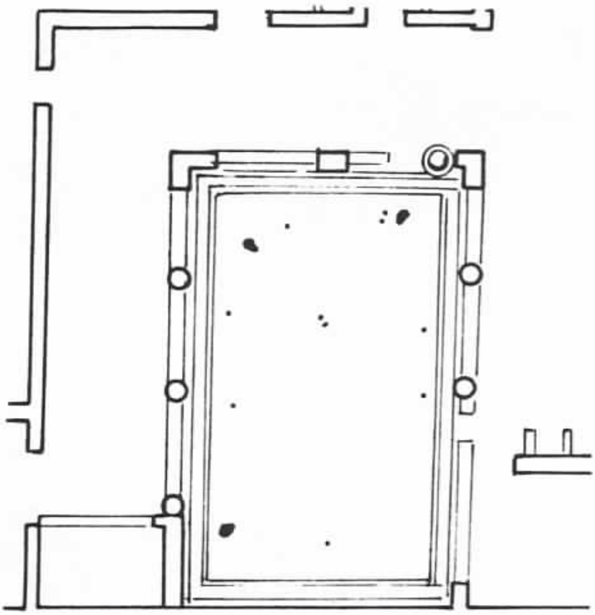
12. Myrtle bushes and ivy mound painted at the base of a garden wall under the *paradeisos* in the garden of the House of L. Ceius Secundus (I. vi. 15) (detail of Fig. 28)



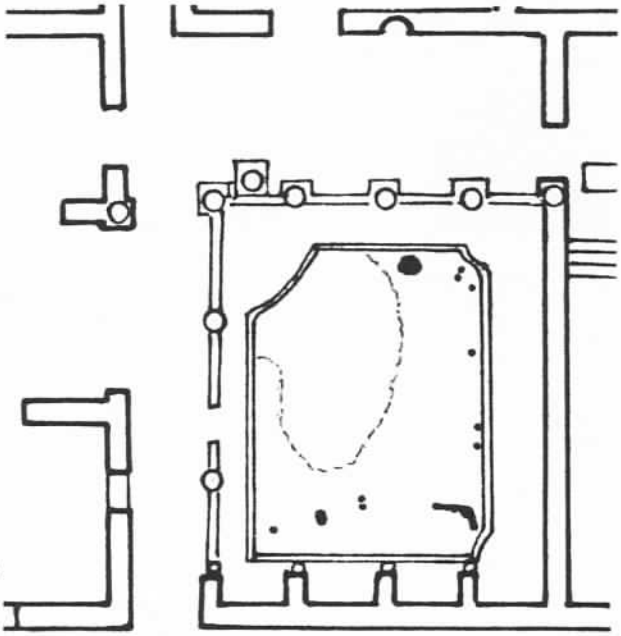
13. Pumice with water pockets, enlarged 600 times (scanning electron microscope photo: John Foss and Mary Patterson)



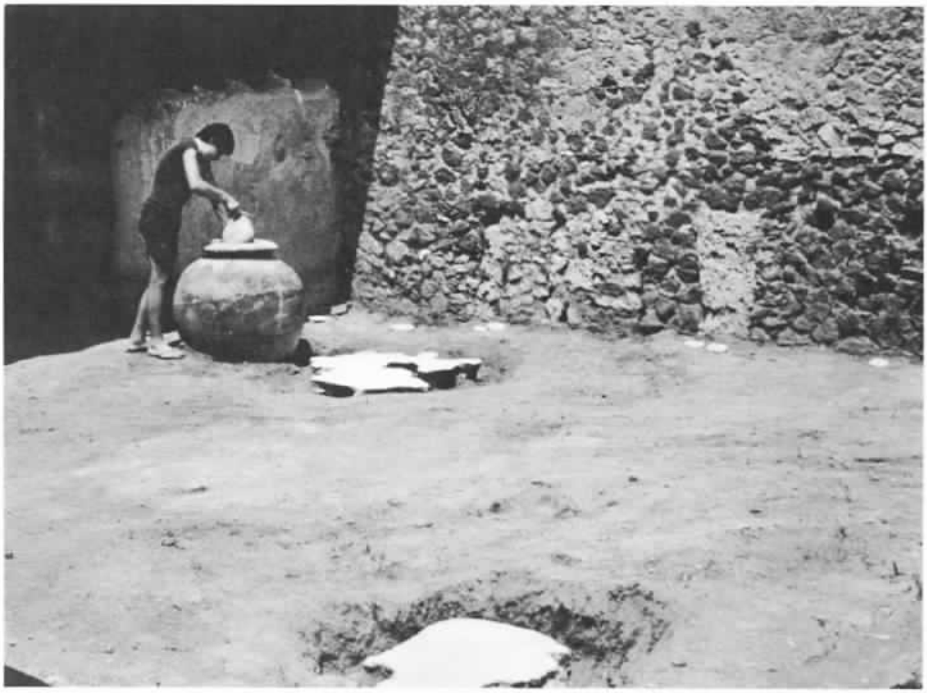
14. Balloon photograph of the peristyle garden in House I. xvi. 2 (photo: Julian Whittlesey Foundation)



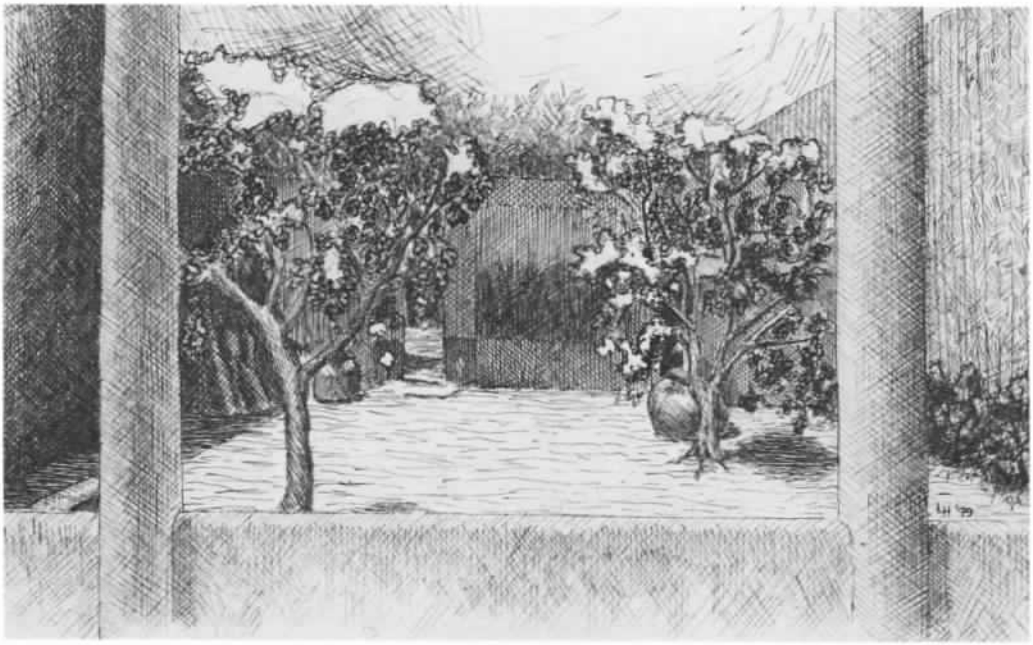
15. Root cavities in the peristyle garden of the House of the Ship Europa (I. xv. 3) (plan courtesy Soprintendenza alle antichità della Campania-Napoli; garden details by Stanley Jashemski)



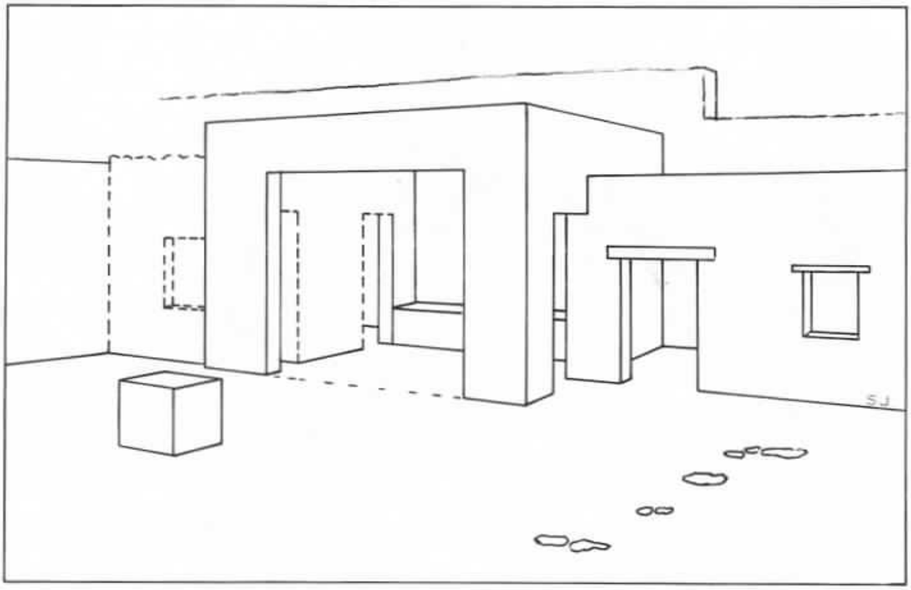
16. Root cavities in the peristyle garden of House I. xvii. 4 (plan courtesy Soprintendenza alle antichità della Campania-Napoli; garden details by Stanley Jashemski)



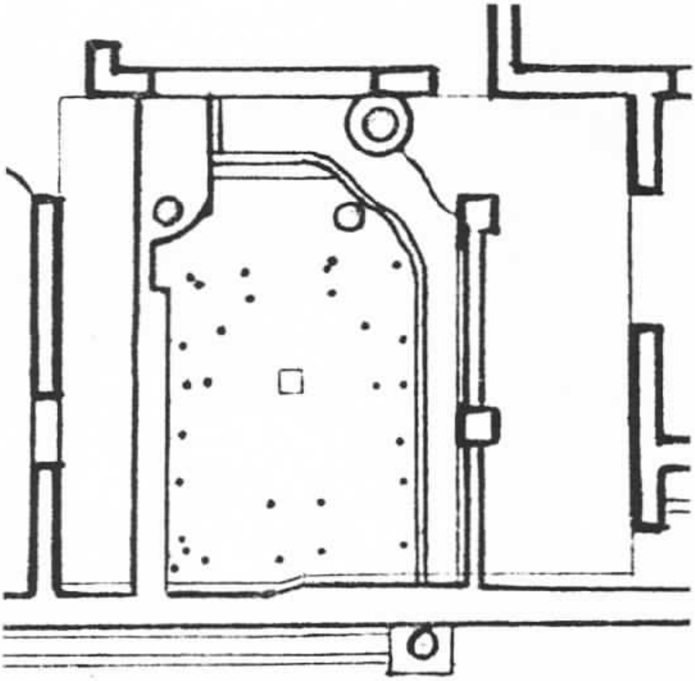
17. Casts of two tree-roots in the garum shop (I. xii. 8)
(photo: Stanley Jashemski)



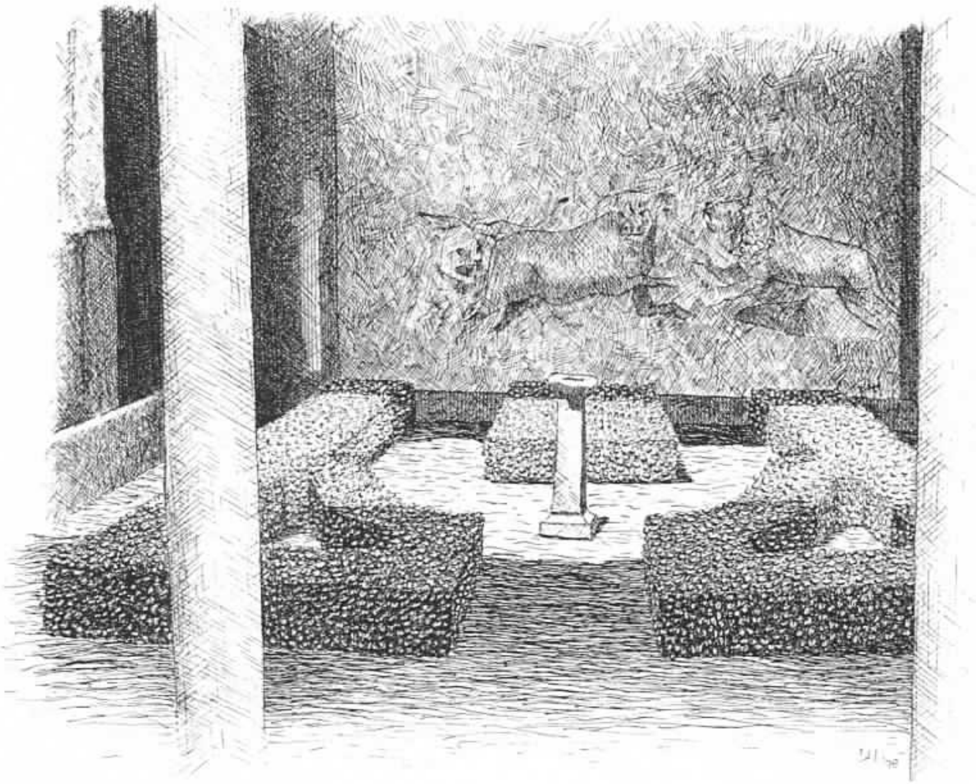
18. Two fig trees shade the garum shop (drawing: Luc Herbots)



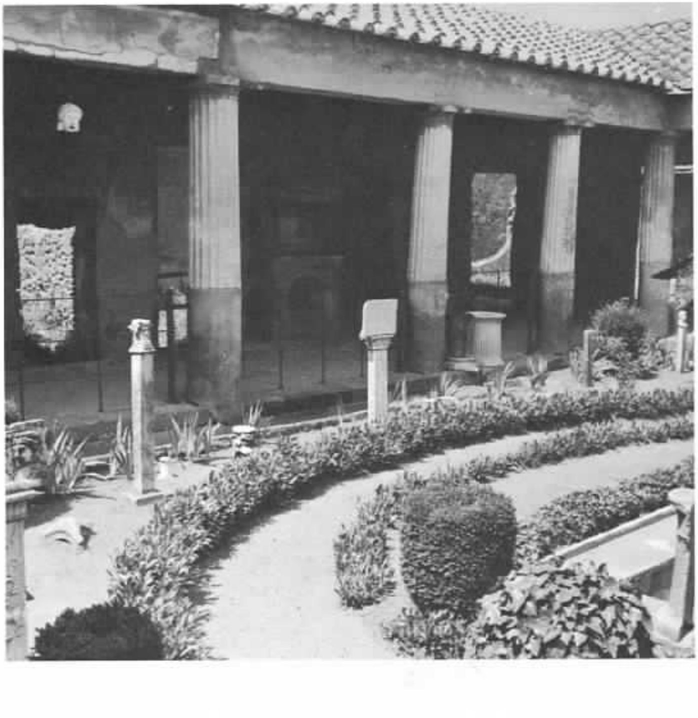
19. Peristyle garden in which Zeus Sabazius was worshiped, showing casts of four tree-roots (drawing: Stanley Jashemski)



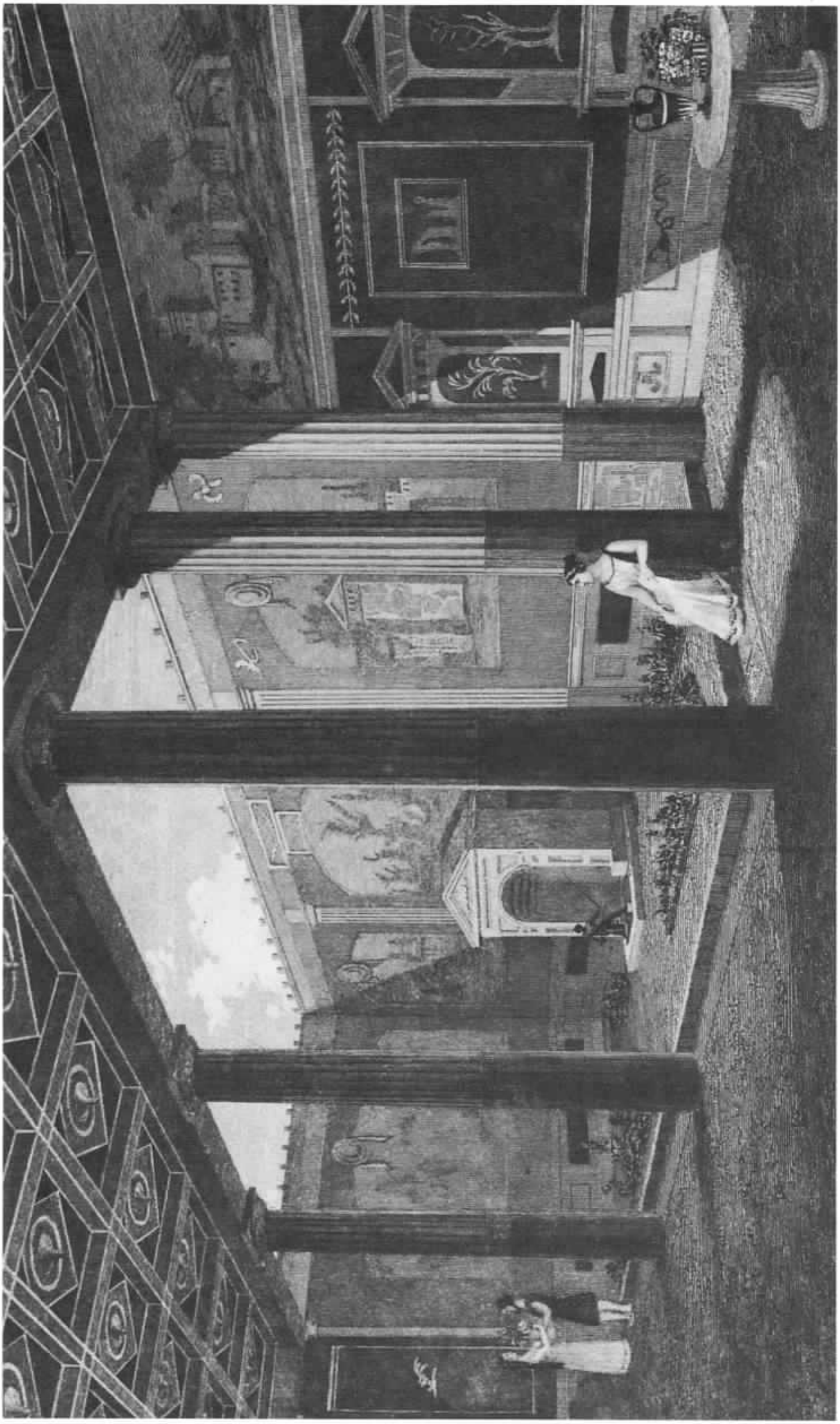
20. Root cavities in the peristyle garden of House I. xii. 11 (plan courtesy Soprintendenza alle antichità della Campania-Napoli; garden details by Stanley Jashemski)



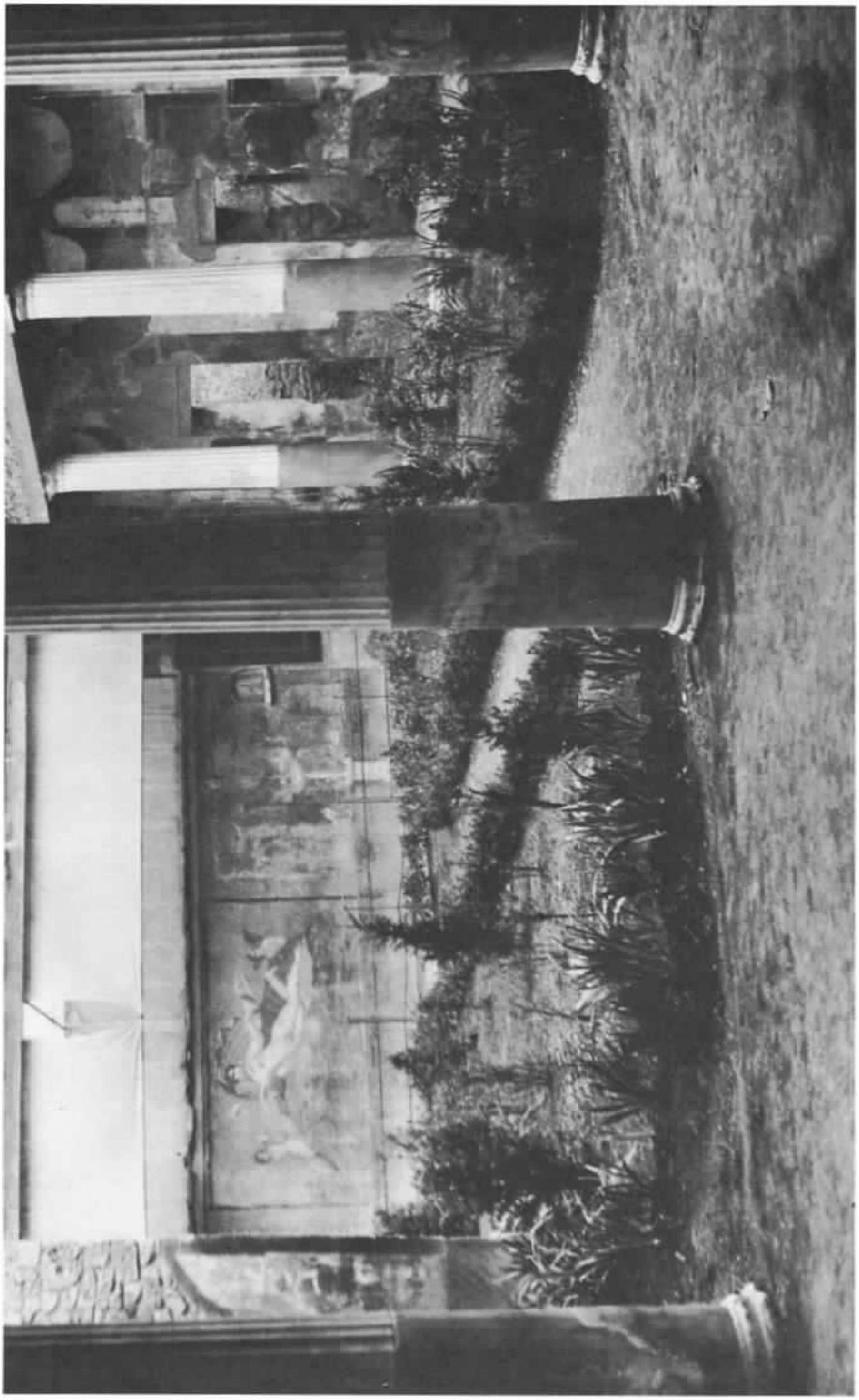
21. Formal planting in the peristyle garden of House I. xii. 11
(drawing: Luc Herbots)



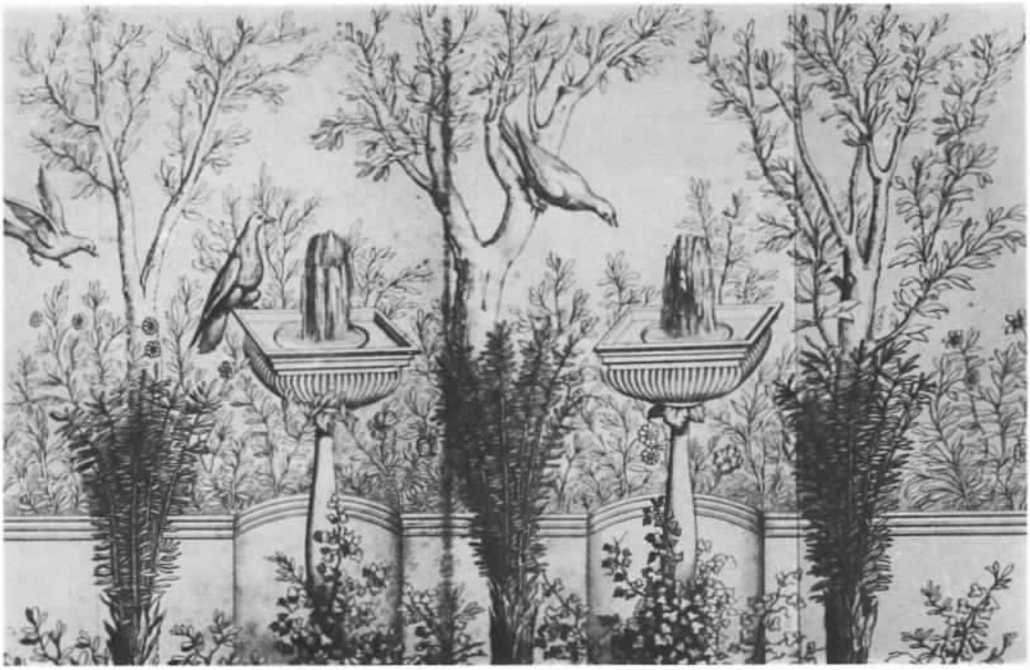
22. Garden sculpture in the House of the Golden Cupids (VI. xvi. 7) (photo: Stanley Jashemski)



23. Mosaic fountain in the House of the Little Fountain (VI. viii. 23) (drawing from W. Gell and J. P. Gandy, *Pompeii: Its Destruction and Rediscovery*, New York, n.d.)

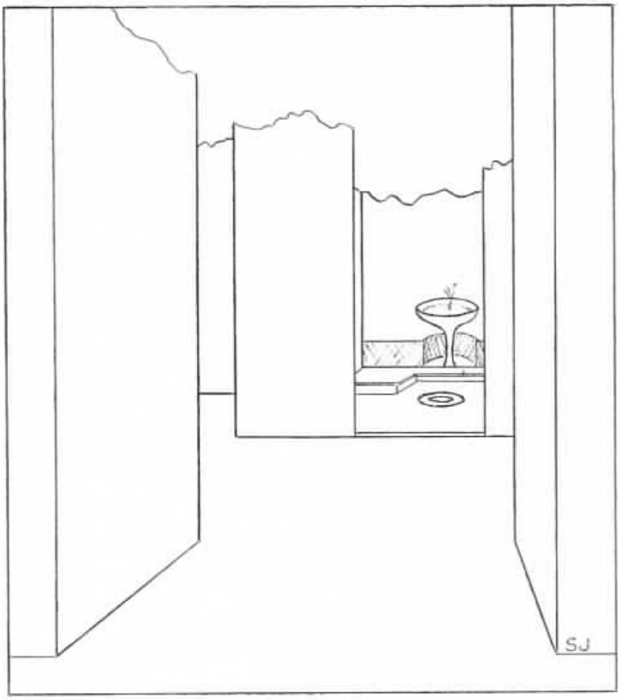


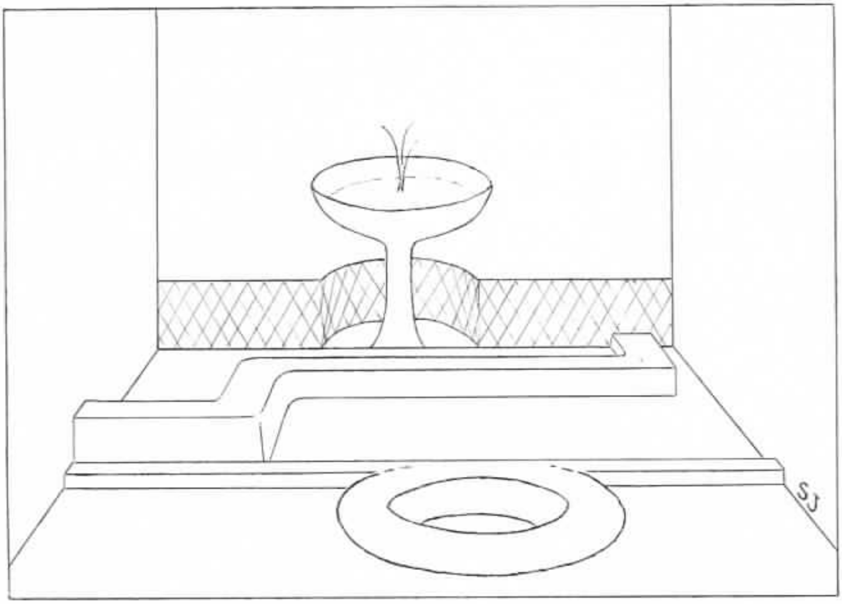
24. Garden paintings in the House of Venus Marina (II. iii. 3) (photo: Stanley Jashemski)



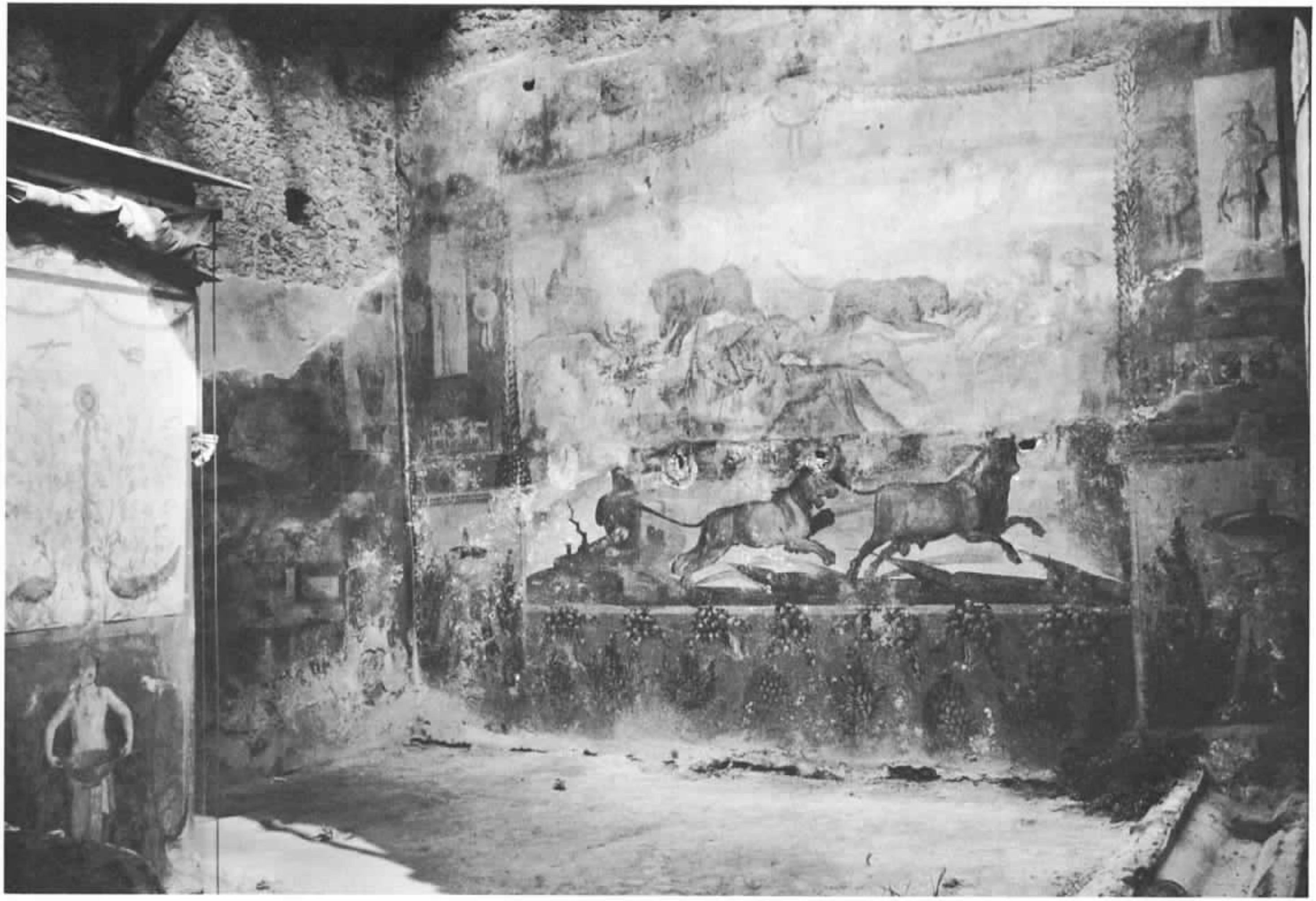
25. Drawing of a garden painting, now destroyed, found in the early excavations (from *Real Museo Borbonico*, Naples, 1824–57, XII)

26. Schematic drawing of a garden painting as seen from the entrance to House I. xii. 16 (drawing: Stanley Jashemski)



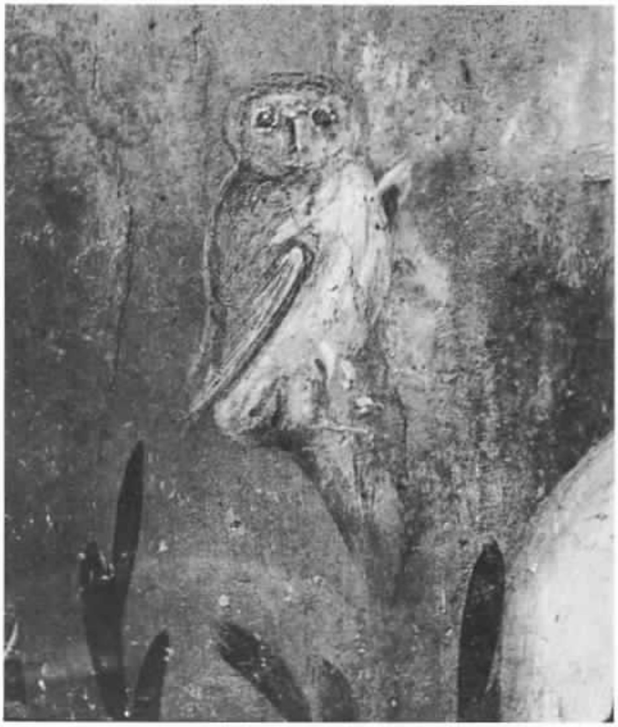


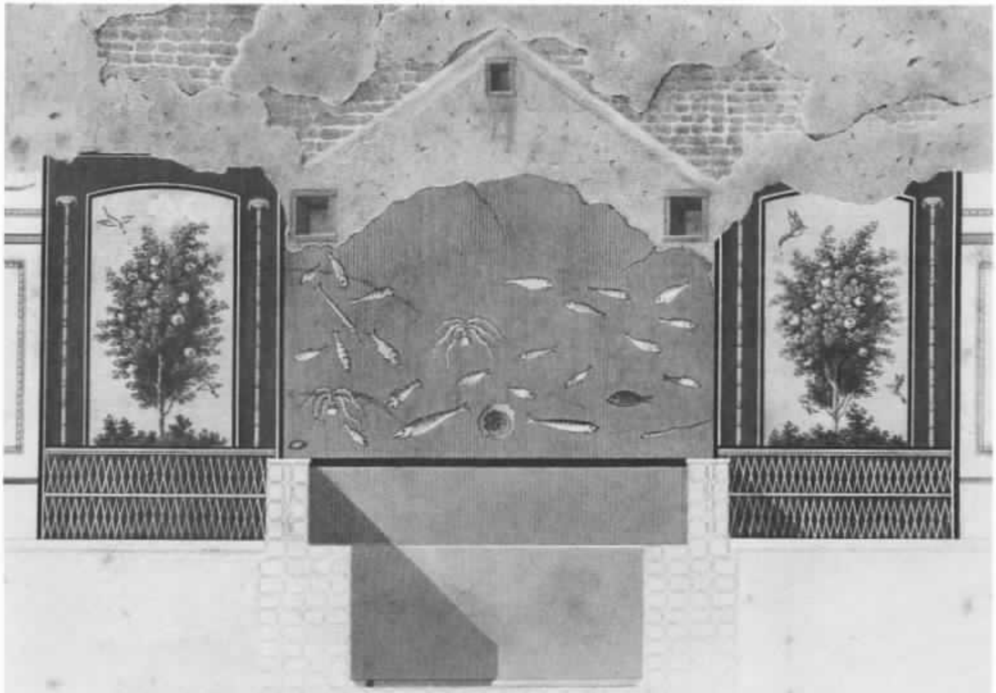
27. Close-up view of the garden painting in Fig. 26 (drawing: Stanley Jashemski)



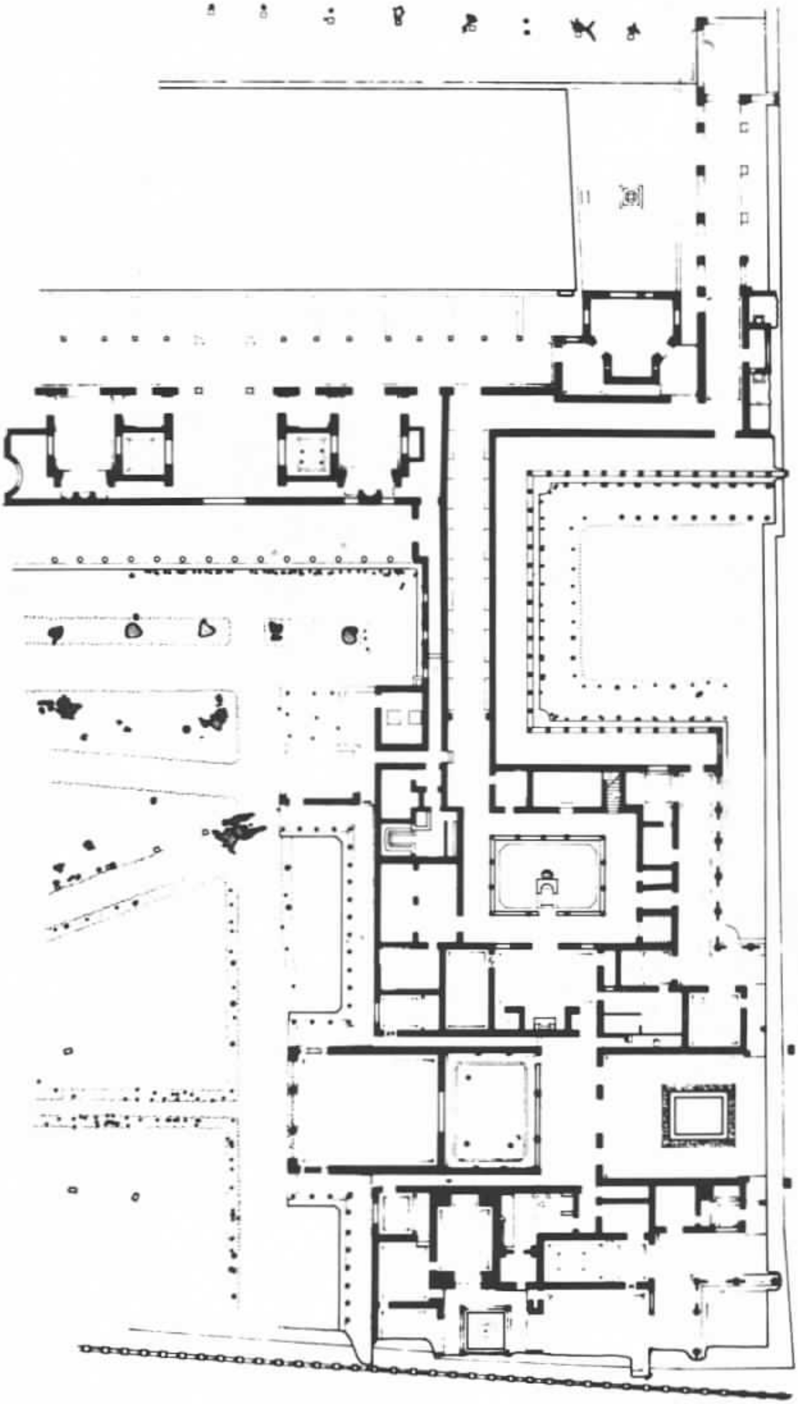
28. Animal painting (*paradeisos*) in the garden of L. Ceius Secundus (I. vi. 15) (photo: Stanley Jashemski)

29. Tawny owl, *Strix aluco* L. (detail of Fig. 28)

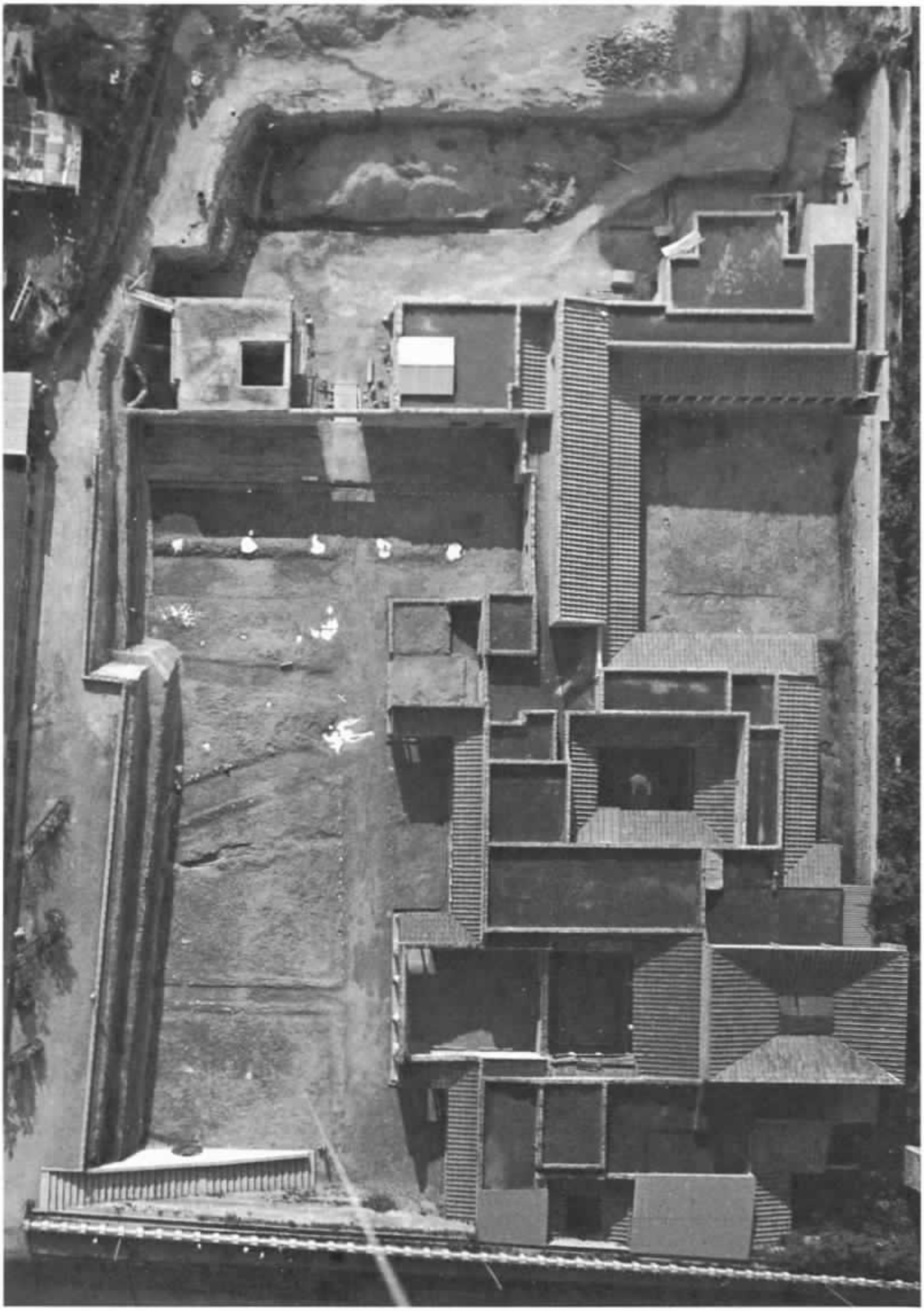




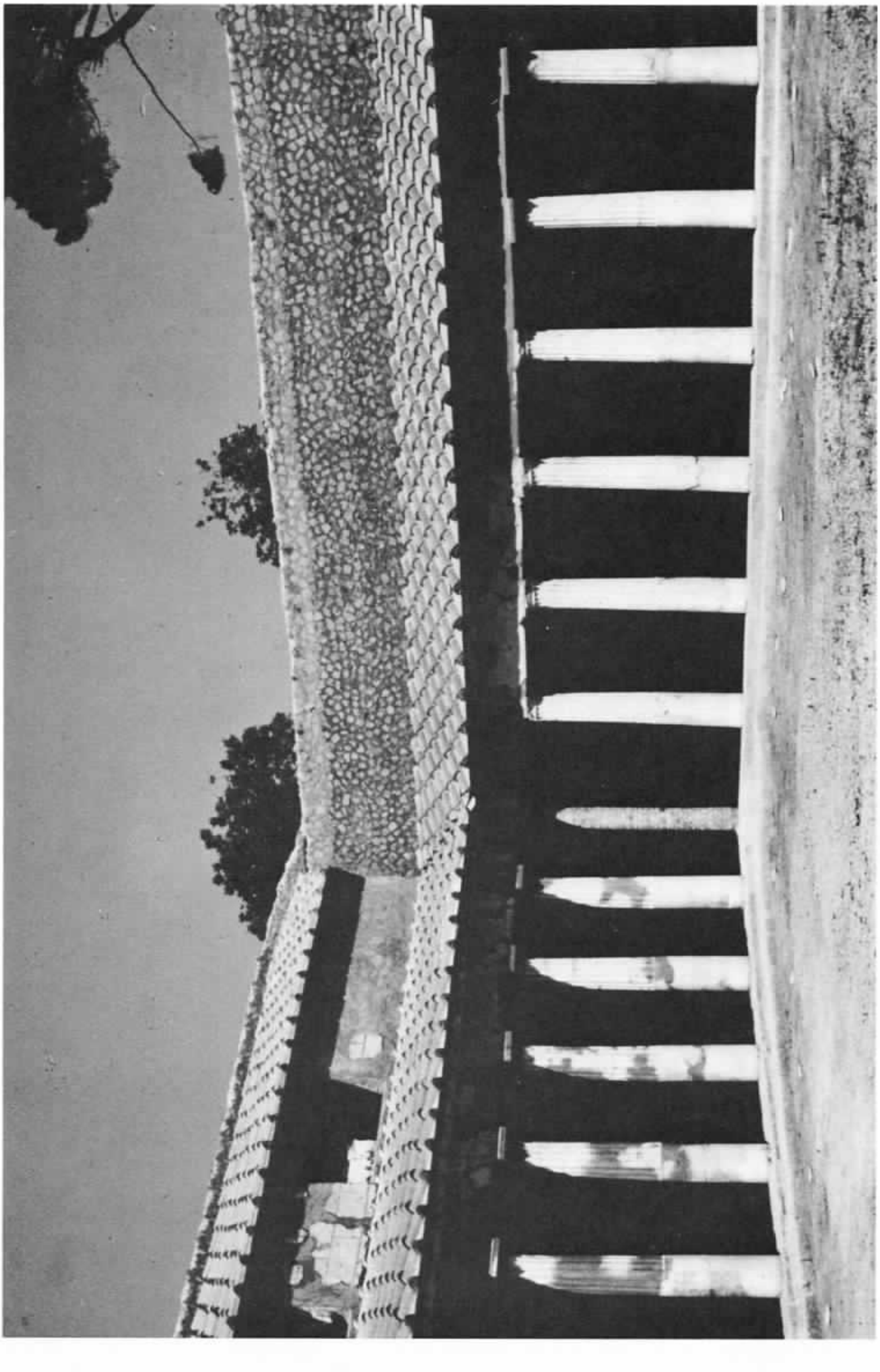
30. Engraving of a garden painting in the Villa of Diomede; on each side a pomegranate tree, in the center a well-stocked fish pond (from *Les ruines de Pompéi* (Paris, 1824–28) v. 2, pl. 52, fig. 1



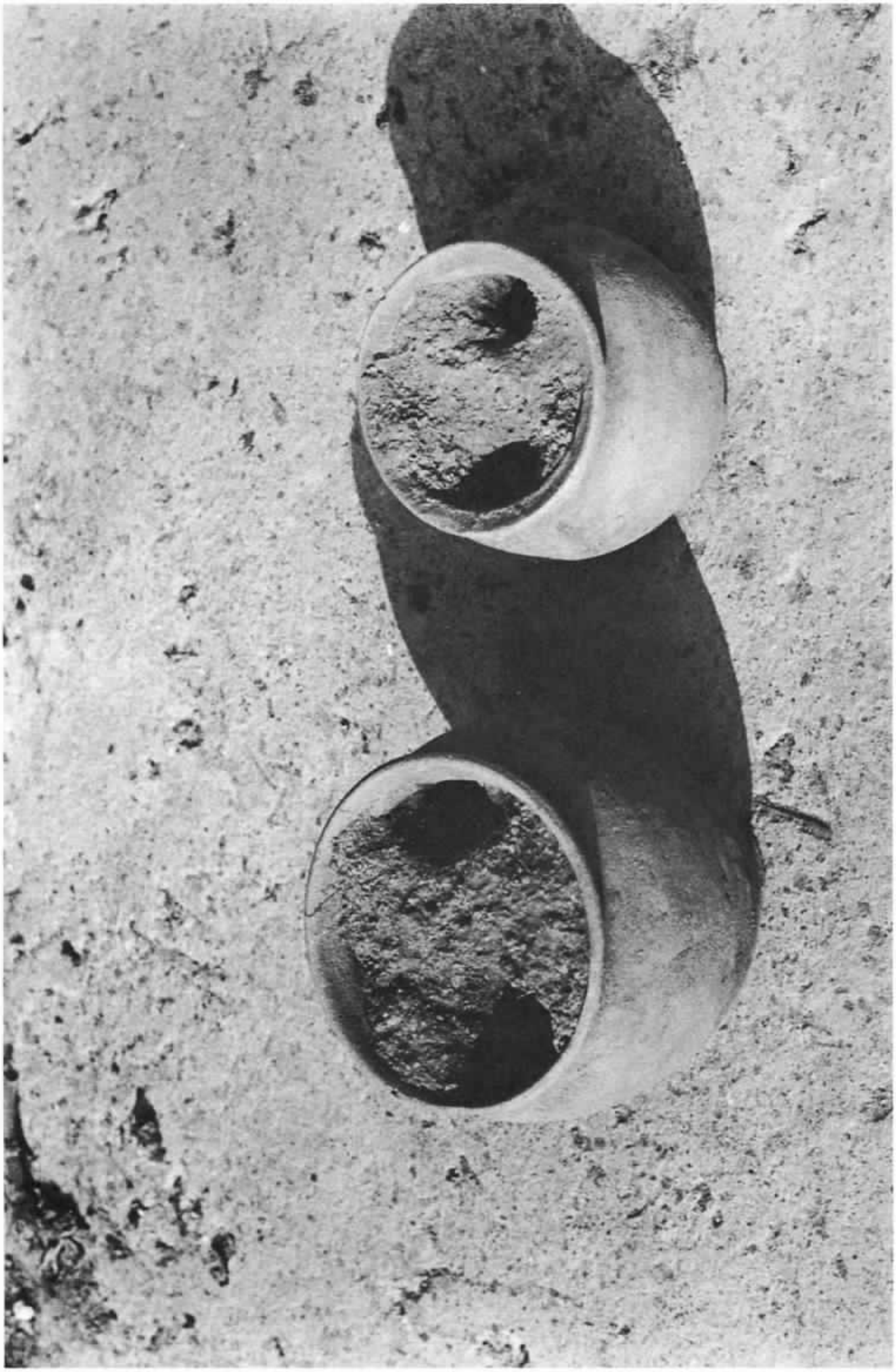
31. The villa at Torre Annunziata (plan courtesy Soprintendenza alle antichità della Campania-Napoli; garden details by Stanley Jashemski)



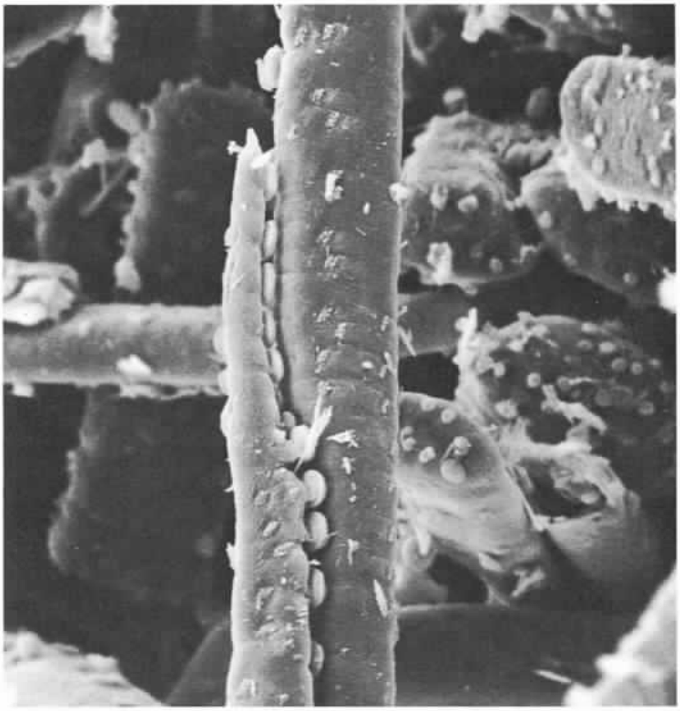
32. Balloon photograph of the villa at Torre Annunziata (photo: J. Wilson Myers for the Julian Whittlesey Foundation)



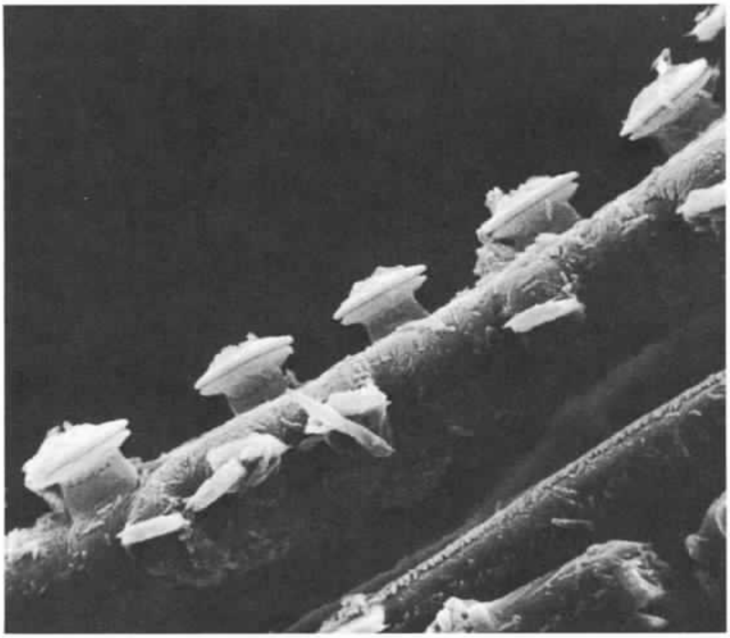
33. Southeast peristyle garden of the villa at Torre Annunziata (photo: Stanley Jashemski)



34. Pots, each with two small root cavities (photo: Stanley Jashemski)



35. Vessel elements of the wood from a branch of oleander found near statue base VI, villa at Torre Annunziata, enlarged 1000 times (scanning electron microscope photo: Francis M. Hueber)



36. Detail of Fig. 35, enlarged 2750 times

Preliminary Excavations in the Gardens of Hadrian's Villa: The Canopus Area and the Piazza d'Oro
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Preliminary Excavations in the Gardens of Hadrian's Villa: The Canopus Area and the Piazza d'Oro

WILHELMINA F. JASHEMSKI AND EUGENIA SALZA PRINA RICOTTI

Abstract

Preliminary excavations in 1987–1988 in the Canopus area and in the Piazza d'Oro indicate that Hadrian's Villa contains much important evidence for our knowledge of ancient Roman gardens. On the west bank of the Canopus evidence was found of elaborate terraced gardens still covered with undisturbed soil and on the east bank a row of discarded amphoras was discovered. The amphoras had been cut in half and used as planting pots, giving significant information about the planting pattern.

In the Piazza d'Oro a sloping tufa terrain with an insufficient soil covering for plants made it necessary for Hadrian to cut planting holes into the tufa; these were then filled with fertile soil. Large planting pits were found in 1987–1988 that appear to continue around the edge of the garden. In the bed on the west side of the euripus an intricate network of trenches cut to provide drainage for the planting beds was found, as well as smaller planting holes. Subsequent excavations made it possible to explain the unique irrigation system of this garden.*

Hadrian's Villa has been studied by Classical archaeologists and architects for centuries,[1] but the gardens that were such an important aspect of the villa have been given scant attention (fig. 1). Plentiful water from a spring in the overhanging hills and from the nearby aqueducts provided for its gardens and fed the many pools, fishponds, fountains, and nymphaea that adorned the villa and gave it life. Excavations sponsored in the 16th century by Cardinal Ippolito d'Este to collect works of art for his villa at Tivoli and his palaces were undertaken by the architect-archaeologist Pirro Ligorio, who in his *Descrittione* made the important statement that Hadrian's Villa had 90 piazzas.[2] Some were paved, but others contained soil, and many of these would have been gardens. In the entire history of the villa, however, only four gardens have been identified, and only two have been published, and one of these only briefly.[3]

Our excavations in 1987 were successful beyond our greatest expectations and indicated that in spite of the vandalism and neglect that the villa had suffered through the centuries it would yield important information for our knowledge of ancient Roman gardens. Preliminary probes suggested that the Canopus area and the Piazza d'Oro would be fruitful places to begin our excavations.

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* An earlier shorter version of this paper was presented at the 90th General Meeting of the Archaeological Institute of America in Baltimore, 9 January 1989 (*AJA* 93 [1989] 278). Funds for our excavations were provided by Dumbarton Oaks. Other valuable assistance and additional workmen were provided by the Soprintendenza del Lazio. Our work was greatly facilitated by the generous cooperation and gracious hospitality of Maria Luisa Veloccia, Superintendent of Latium, the architect Mario Lolli Ghetti, and the restorer Mario Frisciotti. Gratitude is also expressed to Alessandra Bellini and Pietro Zander, students at the University of Rome, and to Mark Zimmerman and Henry Ferry who took vacation time in 1988 to aid in our excavations. Prof. Ferry also served as photographer during our 1988 season. F.W. Luciolli was photographer during our 1987 season. We also wish to thank Graeme Barker, Director of the British School at Rome, for generously offering the School's facilities for our flotation tests, and to John Conti, who performed the tests. John Foss, Chairman, Department of Plant and Soil Science, University of Tennessee, Knoxville, generously made our soil analyses. Thanks are also due *AJA*'s anonymous reviewers for their comments. Dora P. Crouch, Elizabeth Lyding Will, Joann Freed, Frederick G. Meyer, and William L. McDonald each read portions of this paper and gave valuable suggestions. We also are grateful to the editors of *AJA* for their careful editing of a difficult manuscript prepared by three authors under unusual circumstances.

[1] There is a large bibliography. See E. Salza Prina Ricotti, "Villa Adriana nei suoi limiti e nella sua funzionalità," *MemPontAcc* 14 (1982) 25–55.

[2] P. Ligorio, *Descrittione della superba e magnificentissima Villa Hadriana,* Bar. Lat. 5219, fol. 131 r. in the Vatican Library. For the various MSS of this work see E. Salza Prina Ricotti, "Villa Adriana in Pirro Ligorio e Francesco Contini," *MemLinc* 17 (1973) 5–6.

[3] For a detailed treatment of the stadium garden see A. Hoffman, *Das Gartenstadion in der Villa Hadriana* (Mainz 1980); Hoffman was not, however, concerned with plantings. For evidence of plantings in the Canopus, which were an incidental result of Hannestad's excavations, see infra n. 7. Evidence for two other gardens were found by the Superintendency of Latium in their excavations, but never published: planting pits in the Piazza d'Oro and planting beds in the small garden of the Great Entrance Hall (Vestibule) to the north of the Canopus.

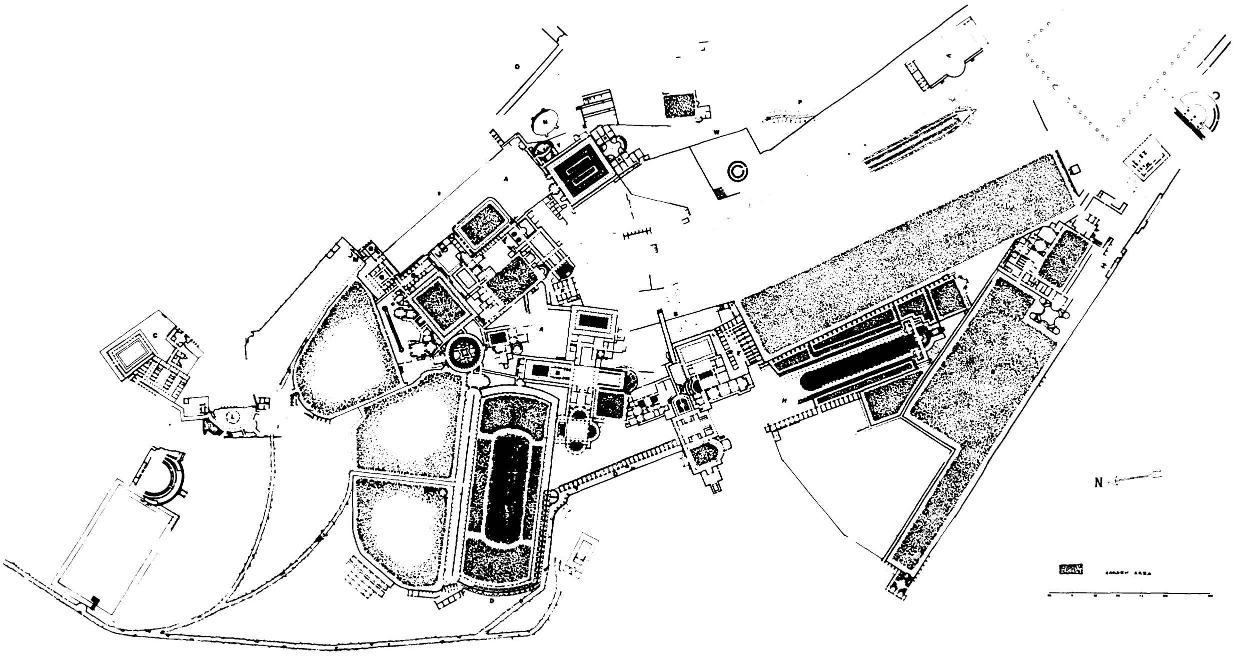

Fig. 1. Plan of Hadrian's Villa at Tivoli, with garden areas highlighted (E. Salza Prina Ricotti)

THE CANOPUS GARDEN

We began in the Canopus area (figs. 2–4), which is the most majestic of the three large banqueting areas known to date.[4] It consisted of a huge *stibadium* (a semicircular masonry couch) located in an enormous domed exedra. Water gently cascaded down the steps on the rectangular niches in the exedra wall at the rear of the stibadium, emptying into a canal that circled the back of the masonry couch, passing under it to flow into another canal in front of the couch, and finally through an underground pipe to reach the long pool or euripus (119 m long, 18 m wide, 1.6 m deep) that resembled a majestic and peaceful river. In the center of the exedra a deep recess ended in a foaming waterfall that was the dramatic focal point of the Canopus.

At the edge of the euripus, marble columns and over-life-size statues, copies of famous Greek originals, were reflected in the blue waters. These statues, excavated by Aurigemma in the 1950s,[5] give us a tantalizing glimpse of the wealth of statuary that once adorned the villa.[6] The statues seen along the euripus today are copies, but the original statues can be seen in the small Antiquarium nearby. Standing on bases near the middle of the west side of the euripus are four caryatids, copies of those of the Erechtheum. At each end was a male telamon. Replicas of the statues found at the north end of the pool have been placed in what was believed to have been their probable ancient locations. Preserved today are a statue of a warrior (Ares? or Theseus?), one of Hermes, and one of Athena; copies of two Amazons (one by Phidias, the other attributed to Cresilas) that stood in the Temple of Artemis at Ephesus; a statue of a huge crocodile that served as a fountain; a reclining Tiber with the she-wolf and the twins Romulus and Remus; and a statue of the reclining Nile with a sphinx.

The first evidence for plantings in the Canopus area was discovered incidentally during excavations by Danish archaeologists, in the course of their unsuccessful search for the tomb of Antinous, the beloved of Hadrian. The statuary of the Canopus has commonly been believed to reflect Hadrian's many interests and travels. The Danish excavations, however, were guided by a belief that the telamons and caryatids suggested a tomb setting, and that the tomb or cenotaph of Antinous was likely to be located in the flank of the hill along the west side of the euripus,

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[4] E. Salza Prina Ricotti, "Water in Roman Garden Triclinia," in E.B. MacDougall ed., *Ancient Roman Villa Gardens* (Dumbarton Oaks Colloquium on the History of Landscape Architecture 10, Washington, D.C. 1987) 175–78.

[5] S. Aurigemma, *Villa Adriana* (Rome 1961) 110–11.

[6] For a more recent and detailed discussion of all the statuary of the villa and their exact provenance, see J. Raeder, *Die statuarische Ausstattung der Villa Hadriana bei Tivoli* (Frankfurt 1983); for the Canopus, see also J.-C. Grenier, "La décoration statuaire du 'Serapeum' du 'Canope' de la Villa Adriana," *MEFRA* 101 (1989) 925–1019.

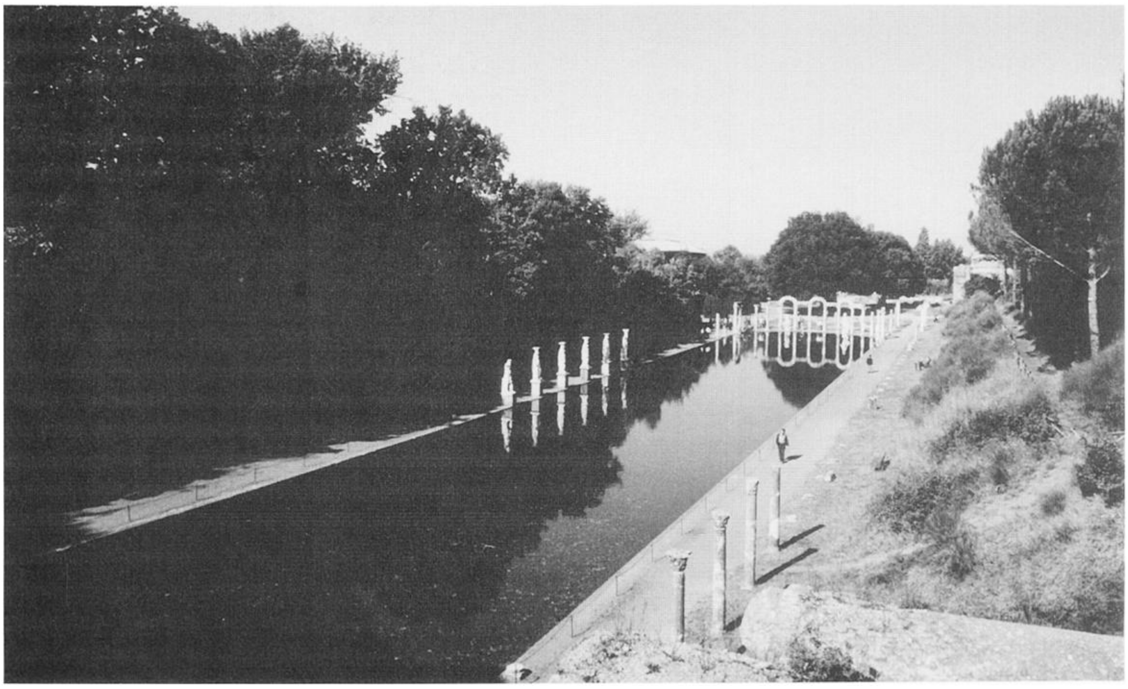

Fig. 2. Canopus. View toward the north. (Photo: F.W. Luciolli)

in line with these statues.[7] The Danish team did not find a tomb or cenotaph, but they uncovered the base of a Hadrianic wall in front of a row of half-amphoras that had been used as planting pots, and were still embedded in the soil; they also discovered several smaller planting pots.[8] Since they were not searching for gardens, they did not continue their excavations.

The discovery of the planting pots was important and clearly indicated that the area had been landscaped and should be examined further. In the first days of our 1987 season we excavated in that part of the west bank not examined by Hannestad and the Danish team to see if the row of half-amphora planting pots continued. We found none, but we did find many fragments of small pots that appear to have fallen from a bed on a higher terrace. In one trench (fig. 4, b) we detected a long and continuous stratum of ashes, which probably had been spread as fertilizer.[9]

We decided to concentrate our work on the east bank, where we found an area still covered with undisturbed soil. Trench d indicated the existence of a planting bed similar to that on the west bank, but we found no evidence of pots in this trench. We next excavated a trench (e) in line with trench d, but farther south, and directly across the euripus from the row of two telamons and four caryatids. At a depth of about 30 cm we found in situ what appeared to be a

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[7] N. Hannestad, "Über das Grabmal des Antinoos: Topographische und thematische Studien im Canopus-Gebiet der Villa Adriana," *AnalRom* 2 (1982) 80. See M.T. Boatwright, *Hadrian and the City of Rome* (Princeton 1987) for a strong negative reaction to Hannestad's theory that the Serapeum-Canopus complex was an area used for a cult in honor of Antinous. She points out (148) that his arguments that "the Caryatids and two male telamons are sepulchral and provide a suitable setting for Antinoos' obelisk and tomb overlook other associations of the types. . . . No independent evidence warrants supposing that the Canopus was a cult area. Hannestad's archaeological evidence does not corroborate his presumptions." In a long appendix, "The Obeliscus Antinoi," Boatwright also points out (258) that the theory of H. Kähler, "Zur Herkunft des Antinousobelisken," *ActaAArtHist* 6 (1975) 35–44, and Hannestad that the original location of the obelisk and tomb or cenotaph of Antinous was in the Canopus complex is based on an erroneous translation of part of the obelisk's inscription and ignores the wider significance of the monument. "The archaeological and art historical material does not support their case." See also H. Lavagne, *Operosa antra* (Rome 1988) 603–16. Lavagne also rejects Hannestad's theory and sees the grotto as "un grotto-triclinium dans la tradition des jardins-paysagistes" (610). Both Boatwright and Lavagne, however, would concede that this site might have had special meaning for Hadrian after the death of Antinous.

[8] Hannestad (supra n. 7) 89–95.

[9] For the use of ashes as fertilizer, see Pliny *HN* 17.55 (quoting Cato).

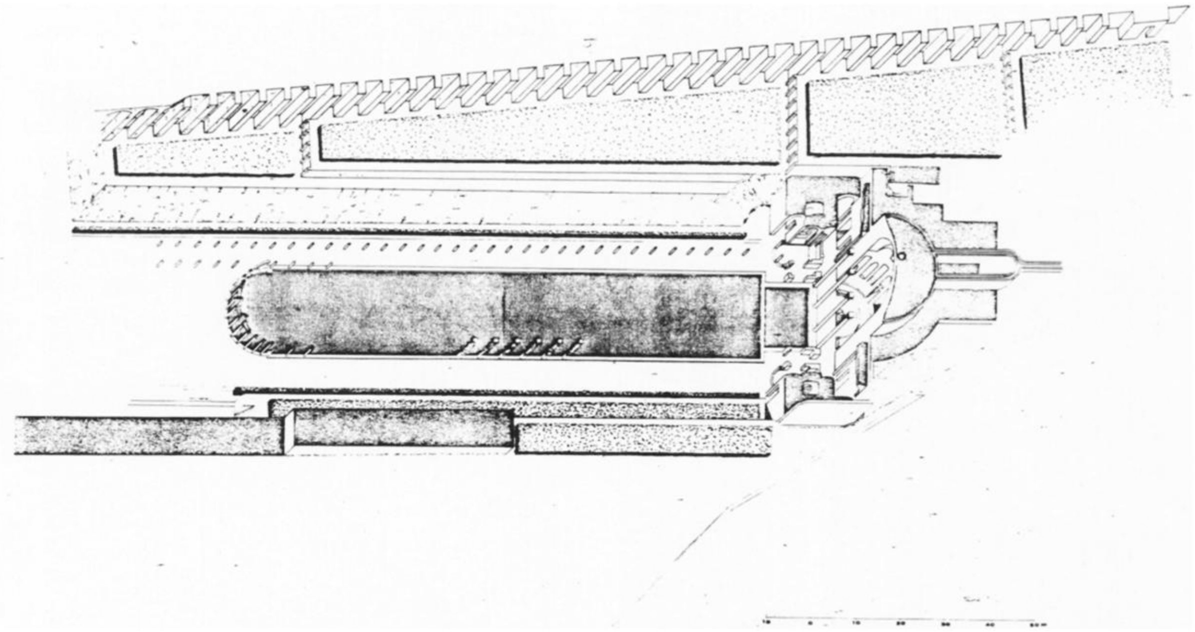

Fig. 3. Axonometric reconstruction of the Canopus. (E. Salza Prina Ricotti)

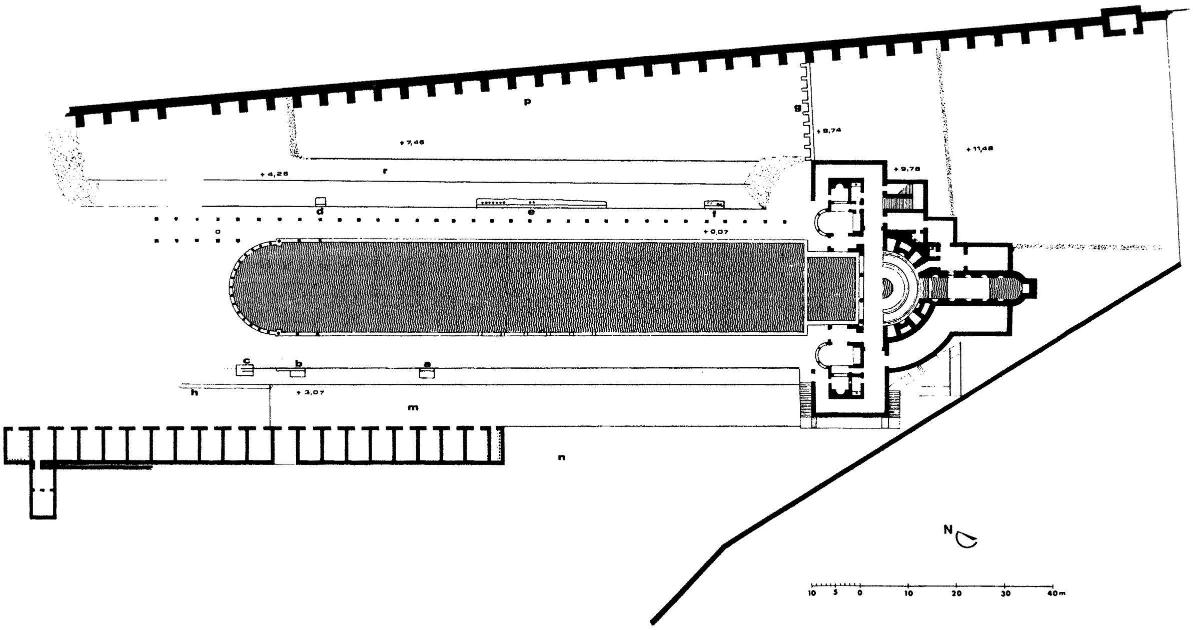

Fig. 4. Plan of the Canopus. (E. Salza Prina Ricotti)

row of seven discarded half-amphoras used as planting pots (fig. 5). They were irregularly placed, 20–50 cm apart. No additional pots were discovered in this trench for approximately 2.12 m, but then we found two more pots, 20 cm apart. In a third trench (f), in line with trench e and 20 m further south, we found remains of four more planting pots.

The use of discarded amphoras as planting pots had long been practiced in the ancient world, as a vase painting on a lekythos in Karlsruhe, showing a scene from the festival of the god Adonis, gives witness.[10] Eros holds an "Adonis garden"—the bottom half of a broken amphora—filled with soil and planted with lettuce and fennel. At his feet is another "Adonis

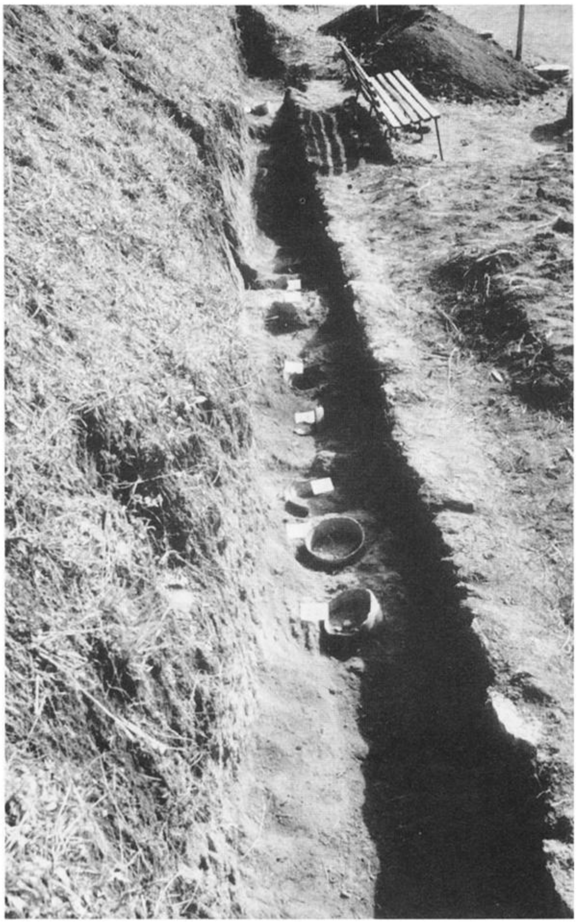

Fig. 5. Canopus. Row of planting pots in ground. (Photo: F.W. Luciolli)

garden," the top half of the amphora similarly planted. In the Canopus garden, however, the planting pots had been put in the ground.

When we excavated the pots we found that three holes had been cut in the sides of most of the amphoras and an additional one in the base of the lower half of the amphora. In the top half of the amphora the mouth provided the additional opening. These holes reminded us of Pliny's description of planting pots "provided with breathing holes for the root."[11] Such holes of course provided necessary drainage for young plants, and as the plant grew, the roots reached out of the holes. But it is noteworthy that the entire half-amphora was not found in a number of planting holes, and when found, the pot had been broken by the pressure of the growing roots. In some locations only fragments of the pot were found. In two locations only one small amphora fragment was found.

The more plentiful and better-preserved evidence of planting pots found in gardens of the Pompeii area is a valuable aid in interpreting the evidence from the Canopus garden. In the luxurious villa believed to have belonged to Poppaea at Oplontis, near Pompeii, a half-amphora had been used as a planting pot behind one of the statue bases in the sculpture garden beside the swimming pool (fig. 6). In the Vesuvian area, after the A.D. 79 eruption, as the ancient roots decayed, lapilli gradually filled the cavities. As a result, the cavities can be carefully emptied today and filled with cement to make a cast of the ancient root.[12] When the Oplontis root cast was excavated it was obvious that the tree had been air-layered in the top part of a broken amphora, and that the roots had grown out of the mouth of the amphora. As the roots grew they had also pushed against the sides of the pot and broken it. Examination of scanning electron micro-

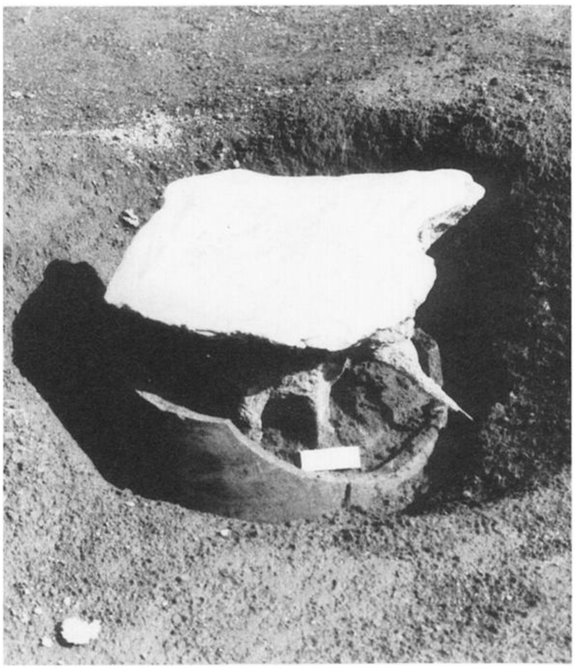

Fig. 6. Cast of tree root in half-amphora behind statue base in sculpture garden at Oplontis. (Photo: Francis Hueber)

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[10] FR pl. 78.1. At Athens women celebrated the festival of Adonis, the beautiful youth beloved by Aphrodite (who after his death became a god), by putting on the housetops "Adonis gardens" whose quick growth symbolized the rebirth of the god. See D.B. Thompson, *Garden Lore of Ancient Athens* (*AgoraPicBk* 8, Princeton 1963) fig. 50.

[11] Pliny *HN* 12.16.

[12] W.F. Jashemski, *The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius* I–II (New Rochelle 1979, 1992). See esp. vol. I, 23 and fig. 31.

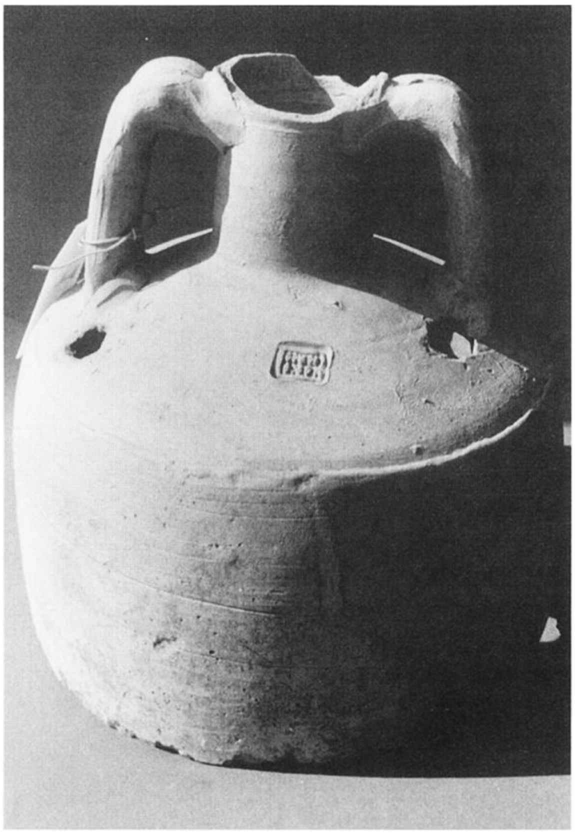

Fig. 7. Top half of amphora used as planting pot in Canopus garden. (Photo: F.W. Luciolli)

scope photographs of the preserved woody material from this tree indicated to Francis Hueber, curator of palaeobotany at the Smithsonian Institution, that this tree was probably a lemon.[13] In the front peristyle garden in the villa at Oplontis, where many smaller pots were found, the pots appear to have been broken before the plant was put in the ground. In those instances, parts of some pots were apparently lost, for only fragments were found in some places, and in other places neither a pot nor fragments were found, but the root cavities were perfectly preserved.[14] This was also true in the peristyle garden in the House of Polybius at Pompeii (IX.xiii.1–3), where a row of trees started in pots had been espaliered against the western garden wall.[15] In the Garden of Hercules at Pompeii (II.viii.6), when the sizeable casts made of tree root cavities were excavated, substantial pieces of the small pot in which the tree had been started were still attached to the root.[16] The pots at Pompeii are approximately 13.0–15.5 cm high, with a mouth diameter of 9.5–10.5 cm, and a maximum diameter of 10.0–14.5 cm.

As we have seen, smaller pots as well as half-amphoras used as pots have both been found in the Canopus garden. It is becoming increasingly evident that the use of pots of various sizes played an important role in ancient Roman gardening.[17] Excavation of the entire bed along the Canopus may clarify why there were areas without any pots. The amphoras in the Danish excavation were also found in widely spaced groups. Possibly the pot had fallen from the plant when it was put into the soil. It is premature to speculate about the plants that grew in the amphoras. The pots are too close together for trees to have been planted in them. A hedge seems more probable.

Italian nurserymen have pointed out that plants embedded in pots require much less water than those planted directly in the ground. This factor may explain the use of large pots. Undisturbed soil from inside the pots and from the area around them was examined by flotation at the British School in Rome for the possible presence of root or twig material, but as yet none has been found. The size of the pot does not necessarily indicate the size of the plant. Very large tree roots have been found growing out of very small pots at Pompeii. The Canopus garden clearly was planned with great care. It is hoped that further excavation will clarify the nature of the plantings.

The question arises as to the date of this planting. Fortunately, one of our pots was a well-preserved half of an amphora (pres. ht. 23.2 cm, largest pres. dia. 24 cm) on one side of which the letters I and N had been cut before the amphora was fired; on the other side was a stamp that has not as yet been read, but it is still under study (fig. 7). Clementina Panella of the University of Rome has identified the amphora as dating to the first half of the second century A.C. and probably coming from the factories of Gargaresc in Libya.[18] It is thus probable that this planting dates to the Hadrianic period.

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[13] W.F. Jashemski, "Recently Excavated Gardens and Cultivated Land of the Villas at Boscoreale and Oplontis," in MacDougall (supra n. 4) 73–74; Jashemski (supra n. 12) II, 299–300 and fig. 335.

[14] Jashemski (supra n. 12) I, 293.

[15] Jashemski (supra n. 12) I, 26–29.

[16] Jashemski (supra n. 12) I, 284–85, figs. 428–29.

[17] For the archaeological evidence for the use of pots in ancient Roman gardens see W.F. Jashemski, "Vasa fictilia: ollae perforatae," in R.M. Wilhelm and H. Jones eds., *Mélanges in Honour of Alexander G. McKay* (in press).

[18] According to Dr. Panella this amphora is similar to Form Schöne-Mau XXXV and to amphoras of the same type from Ostia dated from the first to the second centuries A.C. She dates Ostia III, no. 374, which is similar to our amphora, to the first half of the second century. Hannestad (supra n. 7) 91–92 and no. 94 found a similar pot and had also consulted D. Panella, who had identified it in the same way. Joann Freed (Wilfrid Laurier University) tells us that fragments of amphoras of similar shape and clay have been found at Via Gabina site 11.

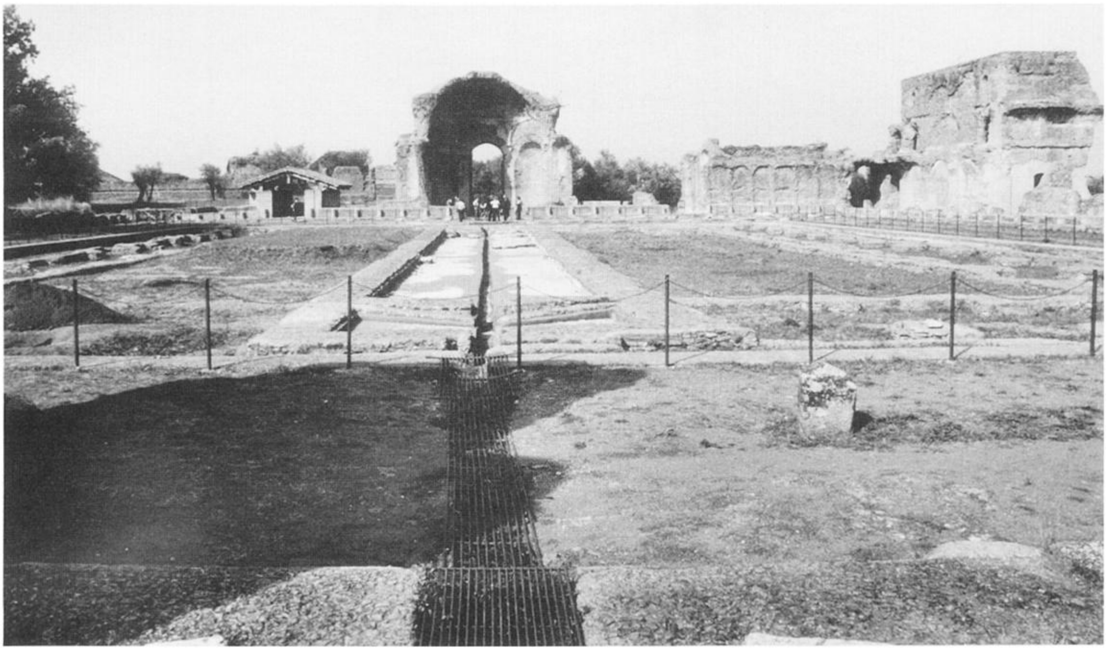

Fig. 8. Garden in the Piazza d'Oro. (Photo: F.W. Luciolli)

There remains the question of the arrangement of the entire valley. Between the planting beds at the level of the euripus and the base of the walls that contain the valley there appears to be a series of intermediate terraces that ought to have had supporting walls. On the west side of the Canopus one of these walls can be seen penetrating the earthwork that extends in front of the lodgings built on the upper level. Moreover, at the top of the Danish excavations, the collapsed remnants of such a wall emerge. The upper terrace in front of the lodgings at the top of the Canopus is 3.07 m above the level of the banks of the euripus.

To speculate about the appearance of the terraces that surely existed on the opposite side of the Canopus is difficult. The slope would have been very steep and without terracing would not have been suitable for any type of gardening. There is also the problem of how the tall part of the central edifice of the Canopus was joined with the terraces on the eastern slope. Fortunately, in a print of Penna[19] one can see the wall of the upper terrace to the south, at the height of the east side of the pavilion. A garden, placed at the same height as the top of the pillar upon which the arch of the great niche rests, is on the same level as the platform at the top of the stairs coming from below. This garden, placed at 9.74 m above the level of the euripus, enjoyed a splendid view over the entire valley below. At the back of this garden and about 1.80 m above it are the remains of a grand pavilion, but the details of its reconstruction can only be hypothetical.

The Canopus area with its many carefully orchestrated parts—the impressive exedra and foaming waterfall that drew all eyes toward it, and the blue waters of the long and peaceful euripus, in which the many fine statues and columns at the water's edge were reflected, together with the landscaped terraces on the banks of the valley—would have been a place of dramatic and satisfying beauty.

THE PIAZZA D'ORO GARDEN

We next conducted preliminary excavations in the garden of the richly ornamented Piazza d'Oro (figs. 8–9), another of the luxurious reception and dining areas in the villa.[20] Quite different from the Canopus garden, which was terraced, this garden was a peristyle garden enclosed by a double portico. Nonetheless, water was again an important element. Down the center of the garden was a shallow but impressive euripus (fig. 9, W), at one time faced with white marble, traces of which still exist (fig. 8). On each side of the euripus were two planting beds, those next to the euripus being much wider than the others.

This garden would have remained a mystery if it were not for the fortunate circumstance that Hadrian had to build this garden on a sloping tufa base with an insufficient soil-covering for plants. To accommodate the plantings it was necessary to cut planting

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[19] A. Penna, *Veduta generale degli avanzi della Villa Adriana nelle vicinanza di Tivoli* (Rome 1840).

[20] Salza Prina Ricotti (supra n. 4) 180–81.

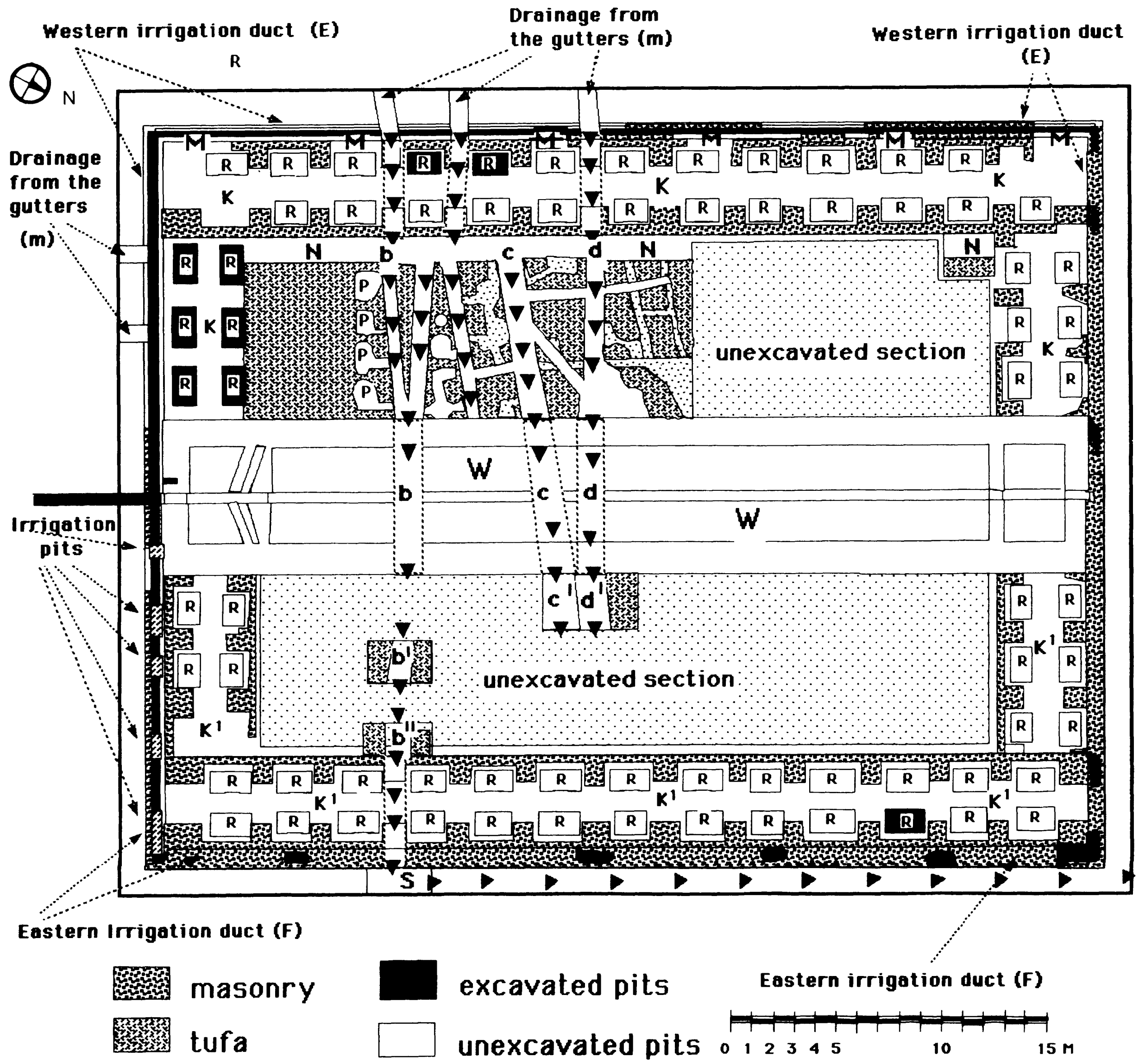
Western irrigation duct (E)
Drainage from the gutters (m)
Western irrigation duct (E)
N
Drainage from the gutters (m)
Irrigation pits
Eastern irrigation duct (F)
Eastern irrigation duct (F)
R
M
K
K¹
N
P
b
c
d
b¹
b¹¹
c¹
d¹
W
S
unexcavated section
unexcavated section
masonry
tufa
excavated pits
unexcavated pits
0 1 2 3 4 5 10 15 M

Fig. 9. Plan of garden in Piazza d'Oro showing planting pits and trenches. (E. Salza Prina Ricotti)

holes into the tufa; these were then filled with fertile soil. In our first season we emptied three large planting pits (approximately 2.10 × 1.30 m and 0.80 m deep). These pits (fig. 10) had been partially emptied and filled in again when the peristyle had been cleaned some years ago, but never published. For this information we are indebted to Mario Lolli Ghetti, architect of the Superintendency at Hadrian's Villa, who told us that he had partially emptied them.

Such planting holes are not unknown at Roman sites, but there are few extant examples. We were immediately reminded of the temple garden at nearby Gabii, where the Spanish excavators found rows of carefully worked, almost square holes in the rock outcropping on which the third-century B.C. temple was built. The meaning of these holes was not immediately apparent at the time of excavation, but Lauter[21] later recognized that the cuttings were similar to those found by Dorothy Thompson in the rocky terrain above the Athenian Agora, so that plantings could be made around the Temple of Hephaistos.[22] Frank Brown found similar planting pits (3.0 × 6.0 Roman ft and 3.0–3.5 ft deep) cut into the rocky surface of the forum in the Roman colony of Cosa.

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[21] H. Lauter, "Ein Tempelgarten?" *AA* 1968, 626–31.

→ D. Thompson, "The Garden of Hephaistos," *Hesperia* 6 (1937) 396–425; Thompson (supra n. 10) figs. 11–14.

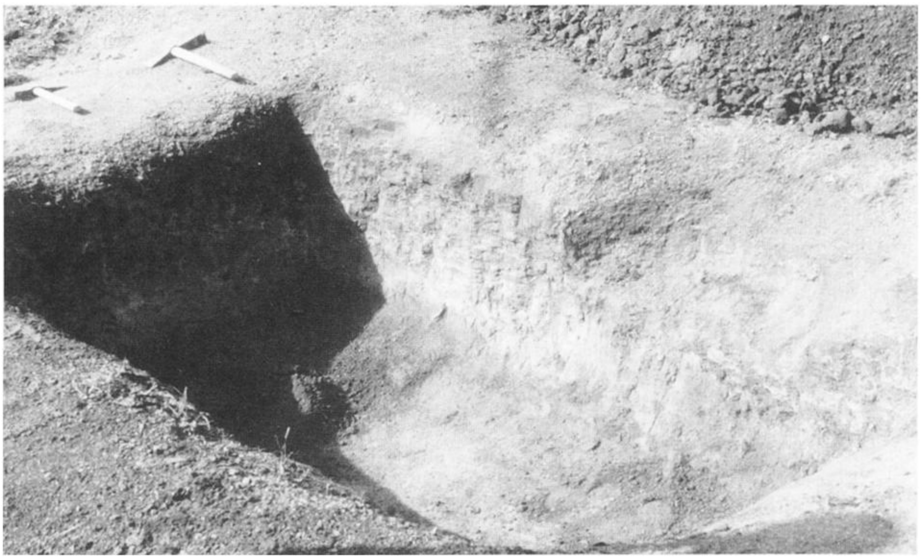

Fig. 10. Planting pit in garden of Piazza d'Oro. (Photo: F.W. Luciolli)

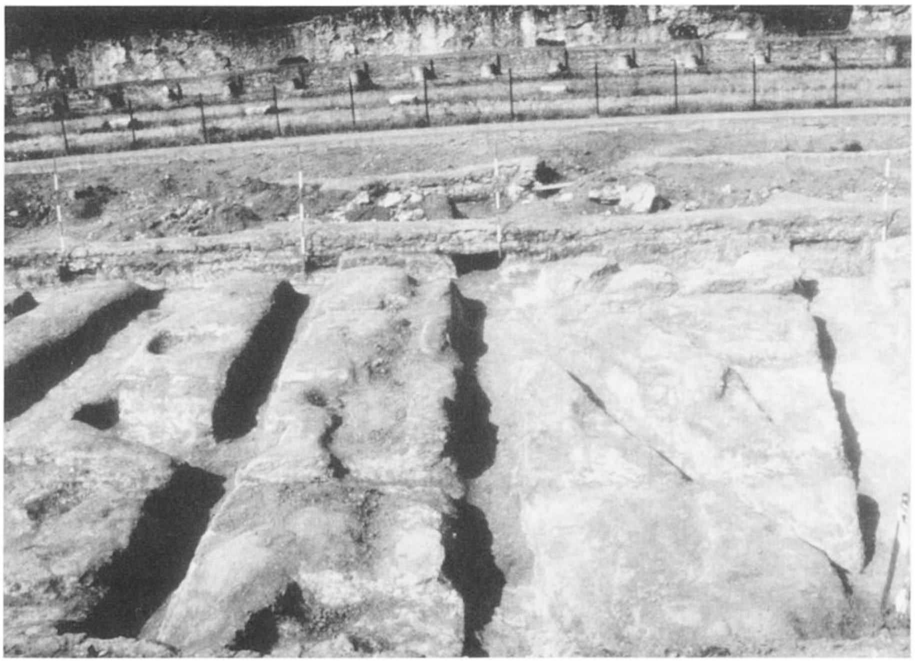

Fig. 11. Piazza d'Oro garden. Trenches cut in tufa. (Photo: F.W. Luciolli)

When the earliest colonists laid out the forum, provision was made for planting eight shade trees at the southeast end, the place reserved for "the stated assemblies of the whole citizen body, mustered in its military and territorial subdivisions."[23] In one of those pits, loam and carbonized rootlets of a fair-sized tree were still intact.

Digging planting pits is the logical solution when faced with the problem of creating a garden on inhospitable rocky terrain. Many centuries earlier Egyptian and Assyrian rulers had used the same method. As early as the XIth Dynasty, the Pharaoh Neb-Hepet Re (2060–2010 B.C.), in the court in front of his mortuary temple at Deir el-Bahri, planted four syca-

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[23] F.E. Brown, *Cosa: The Making of a Roman Town* (Ann Arbor 1980) 24–25, figs. 24, 35, 37, 45, and 52.

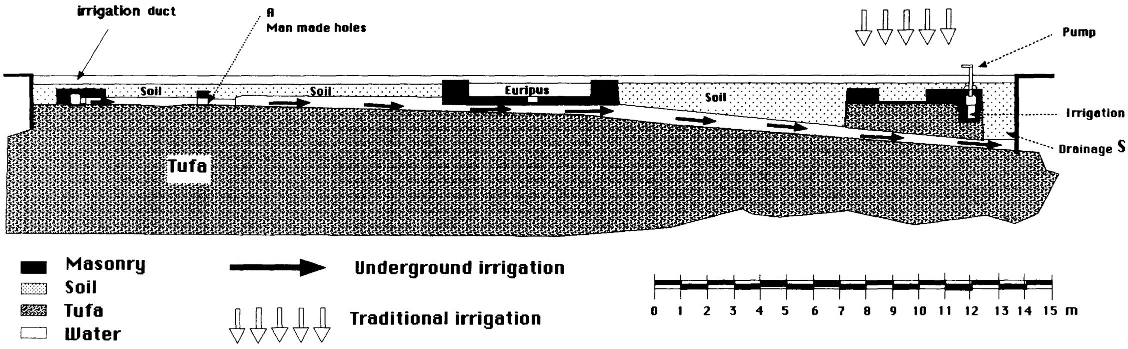

Fig. 12. Garden in Piazza d'Oro. Cross section. (E. Salza Prina Ricotti)

more-fig trees in great pits filled with Nile mud, on each side of the avenue leading to the temple. On either side of these were groves of little tamarisk trees.[24] At the adjacent mortuary temple of Queen Hatshepsut (1486–1468 B.C.), the stump of one of the persea trees (*Mimusops laurifolia* = M. schimperi) that had been planted on either side of the temple ramp can still be seen.[25] The Assyrian king Sennacherib, who ruled from 704 to 681 B.C., cut many large round planting pits (about 1.0 m in diameter and 1.5 m deep) in the rock at Assur, in order to create a garden on the rocky platform on which the festival house of the god Assur was built.[26]

In 1988, in our second season at Hadrian's Villa, we continued to work in the Piazza d'Oro garden. Strange configurations that we had found the previous season in the bed on the west side of the euripus led to the excavation of a part of this side of the garden and to the discovery of an intricate network of trenches that appear to have been created to provide drainage for the planting beds (figs. 9, b–d; and 11). These trenches, instead of following a regular pattern set in parallel lines sloping in the same direction, as agricultural drainage channels usually do, follow an intricate design that may relate to the layout of the planting beds. The trenches, running from west to east (fig. 9, b–d), slope downward, passing under the euripus, continuing under the east planting bed (where the tufa was not as near the surface), and end in a deep canal (fig. 9, S) on the east side of the peristyle. It is significant that John Foss found that the slope is consistently 3%, showing that the garden had been carefully laid out by an engineer. The canal S appears to have been used for irrigation. But there is still a question as to whether the trenches in the large beds were used for watering as well as for drainage. The subsequent excavations of Salza Prina Ricotti, aided by Alessandra Bellini and Pietro Zander, made it possible to explain the irrigation system of the garden. Dr. Salza Prina Ricotti describes her excavations in the following section.

THE IRRIGATION SYSTEM IN THE PIAZZA D'ORO GARDEN

The plan of the garden, as we have seen, was based on a large planting bed (fig. 9, K and K^1) circling the area that included a double row of deep planting pits (fig. 9, R). In the central area, divided in the middle by a marble euripus, was a network of transverse trenches (fig. 9, b–d). The trenches, cut into the tufa, had a square section, measuring roughly 0.40 m wide × 0.40 m deep. As they sloped down, they reached the eastern part of the peripheral planting bed (fig. 9, K^1) at a lower level and crossed it under the tufa (fig. 12) with no contact with the soil contained in its pits. Eventually, the water seeping along the bottom of the trenches was collected by the large drainage canal (fig. 9, S).

During the Hadrianic period this system was buried at least a meter under the soil. At that time the bottoms of the transverse trenches were 0.60–0.80 m below the level of the garden while the bottoms of the pits (0.80 m deep) in the peripheral planting bed were at least 1.80 m below the surface.

In the process of excavating the area we found a series of man-made holes (figs. 12, A; 13) in the inside wall of the western half of the peripheral planting bed. The openings were connected with the transverse trenches (fig. 9, b–d) and were at the same level as the bottom of the canals, 1.20 m above the bottom

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[24] H.E. Winlock, *Excavations at Deir el-Bahri 1911–1931* (New York 1942) 6, 49, 84.

[25] Winlock (supra n. 24) 90. A third tree had been planted in the northeast corner of the forecourt. See also D. Arnold in W. Helck and A. Otto, *LÄ* 1:1019.

[26] W. Anerae, *Das wiederstandene Assur* (Munich 1917) 64–66.

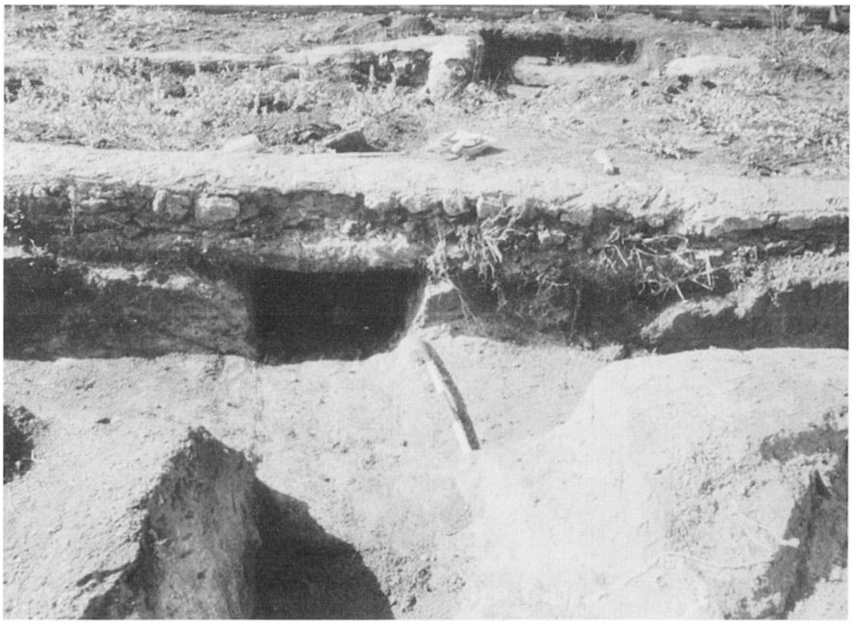

Fig. 13. Piazza d'Oro. Man-made holes in the masonry enclosing the western half of the peripheral planting bed.

of the pits. This showed that their original function could not have been to drain the peripheral planting bed.

Another problem was created by a wide and roughly cut drainage canal (fig. 9, N), which extended from south to north skirting the eastern half of the peripheral planting bed. In its southern part, and only at its beginning, the canal did not disturb the connection between the holes in the partition wall and the transverse trenches, but, as it continued, in order to maintain its incline, it cut through the bottom of the trenches and would have interfered with their, as yet unknown, use.

This drainage canal does not appear to be a part of the original Hadrianic garden, but rather to belong to a later period. Until a few decades ago the site was occupied by an olive grove, and it stands to reason that the area had been disturbed by this planting. The canal is a type called a "French drain," in which the bottom is filled with a layer of large pieces of concrete to help the quick seeping of stagnant water. The pieces of concrete that we found in this canal were part of the Piazza d'Oro masonry, proving that the "French drain" belonged to a later period, probably the 16th or 17th century.

It was then possible to compare the "French drain" with the other trenches to determine which were Hadrianic. The Hadrianic channels could be easily identified because the tufa surfaces were extremely smooth, while the modern ones were very rough and approximate. It became clear that all the canals going from west to east with an incline of 3% and passing under the euripus belonged to the Hadrianic period, as well as some small pits (fig. 9, p) prepared for ornamental plants, and other canals, with different orientations but with smooth surfaces and set at the same level as the west–east canals. All the rest—the large, irregularly shaped holes dug in the tufa to allow the olive trees to expand their roots, and the many rough drainage canals that cut and crisscrossed the area following mainly a south to north incline—belonged to the later period.

During the Roman Empire, the garden was maintained in perfect condition. There must have been some device to prevent the soil from seeping into the passages under the euripus and those under the eastern part of the peripheral planting bed. To accomplish this a frame (*cribra*), made of perishable material, probably vegetal, must have been inserted in those openings.[27] If so, when the garden was aban-

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[27] *Cribra* could have been made of burlap sacks filled with sand and put in front of the passages under the euripus as a kind of filter such as was used in Constantine. See A. Berthier, "Notes sur un philtre romain découvert à Constantine," *Notices et mémoires de le Société archéologique du Département de Constantine* 69 (1955–1956) 173–78, and K. Michálowski, "Les philtres à eau à d'Athibis," *JJurP* 11–12 (1958) 185–89, figs. 1–2.

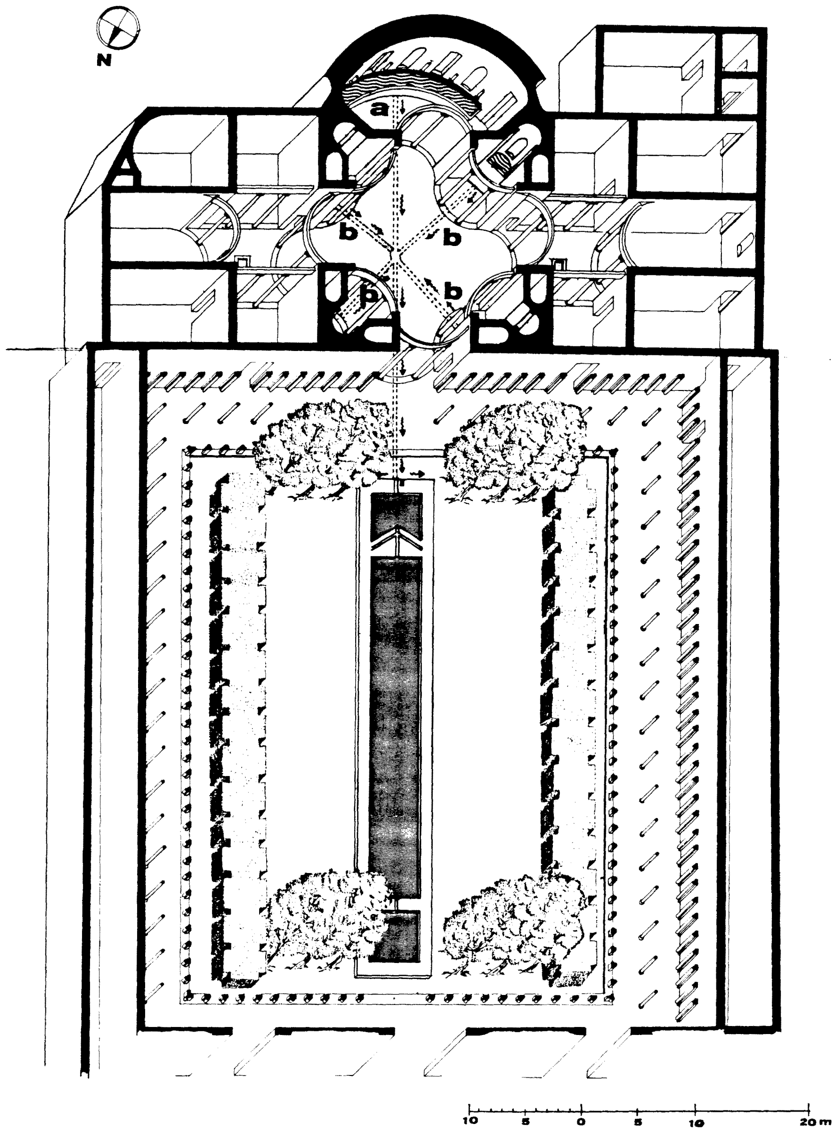

Fig. 14. Piazza d'Oro. The great nymphaeum at the back of the principal hall of the southern pavilion, and the four minor nymphaea set at its four corners. (E. Salza Prina Ricotti)

doned, the frames rotted and disappeared, and the tunnels under the euripus were filled with soil that became compacted and eventually became the kind of local soft rock called *cappellaccio.*[28] From this moment, the western half of the garden became a marsh, which explains the necessity for modern farmers to create the "French drain" and the other drains running from south to north.

The Hadrianic trenches were clearly created to hold ornamental plants, and, given their slope, to serve as drainage canals. They were different, however, from normal drainage canals. In antiquity, drainage canals were provided with a bed of rubble as in the "French drain" or, if stones or pebbles were not available, of bunches of reeds or layers of willow sticks.[29] There was nothing of the kind in the Hadrianic trenches and the soil filling the trenches was still the original soil; traces of rotted organic matter, which forms strata easily distinguishable by color and texture, would have been immediately detected.

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[28] This process does not require millennia to occur. Often during excavation we have found marble fragments and other archaeological material under a thick layer of *cappellaccio.*

[29] Cato, *Agr.* 42.1.

This arrangement with the openings in the wall of the western half of the peripheral planting bed and the transverse trenches was connected to the irrigation system. This system had to work under more than 2 ft of solid ground, which seemed, at first, impossible. We discovered, however, that capillary attraction has been used elsewhere for the irrigation of plants by underground reserves of moisture. We found that such a system was used in the Negev desert,[30] in Tunisia,[31] in South Italy,[32] and in pre-Columbian Mexico.[33] None of these systems, however, operated using an underground infiltration of water. In all of them, during the rainy season or times in which it was possible to irrigate lavishly, water collected at the bottoms of the watertight trenches. This reserve saved the crops and allowed them to flourish during long spells of drought. This system was a good one, as it prevented the leaching of the mineral substances in the soil. Moreover, the water was drawn toward the roots only when the soil around them was becoming dry, thus providing the roots with the proper amount of moisture.

In Hadrian's villa the use of this method was certainly not due to fear of drought. With its many fountains and nymphaea there was no lack of water. The system was clearly used to mechanize the irrigation, restricting the manual labor to the simple handling of a sluice.

Water for the irrigation system was furnished by the great nymphaeum (fig. 14, a) at the back of the principal hall of the southern pavilion, and by the four minor nymphaea set at its four corners (fig. 14, b). This water, collected by a canal built under the floor, flowed out of the building and reached both the large irrigation duct circling around the peripheral planting bed and the euripus. At this point it divided into three parts. The first part flowed into the euripus and provided it with running water, and the other two were directed into the two halves of the irrigation duct.

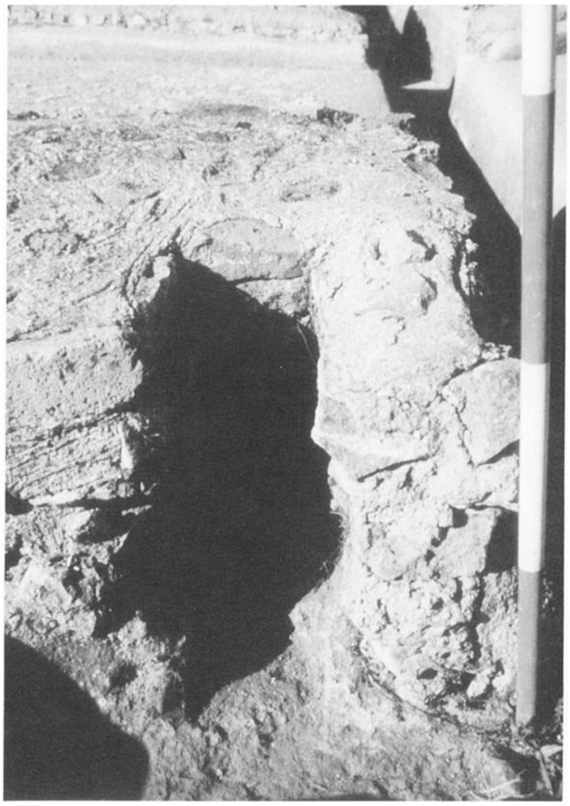

Fig. 15. Piazza d'Oro. The cut for the sluice. (Photo: E. Salza Prina Ricotti)

The two halves of the irrigation duct were quite different. At the entrance to the western half, a cut in the masonry of the euripus (fig. 15) made clear that here there had been a sluice by which water could be controlled. No such provision was made at the entrance to the eastern half of the irrigation duct, where the water was allowed to flow without interruption.

We next began the excavation of the western part of the irrigation duct. The work was easy because the vault that once had covered it had been destroyed, probably at the time of the creation of the olive grove.

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[30] M. Evenari et al., *The Negev: The Challenge of the Desert* (Oxford 1972) 134–228; M. Evenari and D. Koller, "Ancient Masters of the Desert," *Scientific American* 194:4 (1956) 39–45; P. Mayerson, "The Ancient Agricultural Regime of Nessana and the Central Negeb," in H.D. Colt ed., *Excavations at Nessana (Auja Hafir, Palestine)* (London 1961) 39–45. In the ancient Negev the farmers planted their vineyards and trees on rocky slopes with very little soil by using a special technique that consisted of building a kind of barrow shaped like a flowerpot. For the vineyard the farmers created basins, or trenches easily divided into basins, to keep winter rainfall or irrigation water near the roots. The transplanted shoots were generously watered and a large quantity of water was kept in the pit, useful to the plant in the long period of time in which no watering was possible.

[31] In Tunisia, where the only kind of irrigation given to the young olive trees just transplanted is done by hand, and where the water must last them through the summer, farmers do something similar (Mayerson [supra n. 30] fig. 6).

[32] In Apulia, Bradford found the remains of ancient vineyards in areas where the subsoil was too hard to be penetrated by roots, and the soil was unsuitable for growing orchards and vineyards. Here the ancient farmer went so far as to cut out a cubic meter of hard rock to create a pit for his vine or tree (J. Bradford, *Ancient Landscape Studies in Field Archaeology* [London 1957] 100).

[33] A similar system is described in pre-Columbian Mexico. → M.J. O'Brien et al., "Functional Analysis of Water Control Features at Monte Alban, Oaxaca, Mexico," *WorldArch* 11 (1980) 342–55.

Table 1. Results of Tests of Hadrian's Irrigation System

	First Phase	Second Phase
Quantity of water intake	11.00 l	12.00 l
Beginning of the experiment	10:12 a.m.	10:56 a.m.
Appearance of the first drop	10:24 a.m.	10:58 a.m.
End of the seepage	10:50 a.m.	11:23 a.m.
Water seeped through	3.35 l	8.50 l
Water retained by the soil	7.65 l	3.50 l
Thickness of the soaked layer	5.0 cm	2.0 cm

Only a thin layer of soil covered the bottom of the channel, which was directly cut in the tufa and still well preserved. It flowed on the smooth bottom with a slight incline and, from time to time, drains (fig. 9, m) for the rainwater falling from the gutters of the peristyle roof ran into it. We soon discovered, in the partition wall between the irrigation duct and the peripheral planting bed, openings corresponding to the ones already found on the other side. Water from the channel went directly into the transverse trenches.

We decided to test the Hadrianic system by infiltrating water through the soil and letting it flow along the bottom of the trenches to soak the lower layer of the soil and to show how the seeping of water worked underground. Experiments were made recreating the same conditions existing in the trenches (using the same soil and slope). Water was poured into a flue (0.40 × 0.40 × 1.00 m). The time that 11.0 l of water took to seep through it, the quantity of water retained by the soil and the thickness of the layer of soil soaked were measured. When the first intake of water had seeped through, 12 more liters were poured into the lower part of the flue and, again, data were collected. The results are shown in table 1.

The results of this experiment demonstrate that the system worked well. Water could have seeped underground in a trench having a 3% incline and could flow through the soil, which retained part of it for irrigation based on capillary attraction. What was interesting was the discovery that, little by little, with the passing of time, the water seeped more quickly and the quantity retained diminished drastically, until, at the end, all of it went straight through, and the trenches worked only as drainage for the transverse planting beds. That was probably the moment in which the gardeners shut the sluice. It was a brilliant system and three-quarters of the area was watered in this way.

The eastern half of the peripheral planting bed, however, had no contact with the transverse trenches and the seeping water. Thus, the plants in it had to be watered in a different way, and it was clear that the other half of the irrigation duct was used for this purpose. Instead of a sluice at its beginning, there was a small pit measuring 0.52 × 0.45 × 0.40 m deep. Such pits are present in ancient irrigation canals, such as the canals in Cyrus the Great's garden at Pasagardae,[34] or along the terrace on the sea at the Roman villa at Sperlonga (fig. 16). They were necessary for watering gardens in the traditional manner, and were used for drawing water either by hand or by means of a pump.

Other small pits were found all along the length of the eastern irrigating duct. Five pits were set in the southern part, which had lost its covering and could be excavated (figs. 9 and 17). They were cut in the

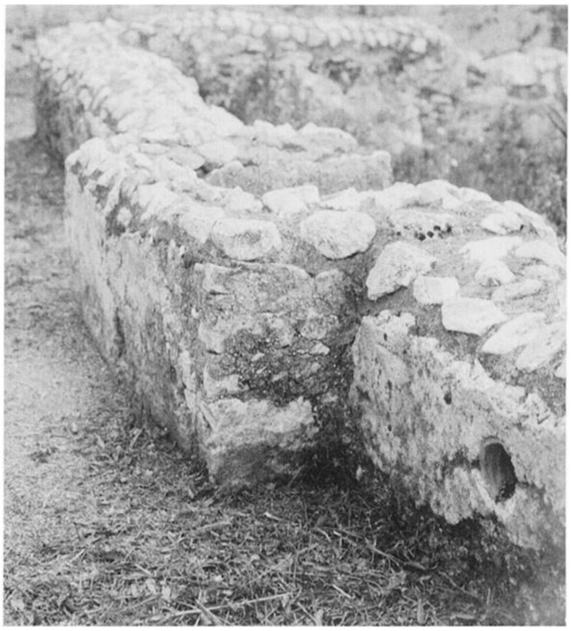

Fig. 16. Roman villa at Sperlonga. Pits for irrigation along the terrace on the sea. (Photo: E. Salza Prina Ricotti)

tufa and all of them had comparable cubic contents. The covered part of the irrigation duct (on the eastern and northern side) could not be explored, but probably pits also existed there and were located at the places where the covering of the irrigation duct was broken. If bronze pumps had been set here, they were certainly ripped away during the Middle Ages to satisfy the "metal hunger" that was characteristic of the times. Pumps may not, however, have been necessary for irrigation, although one is included in the hypothetical reconstruction in figure 12.

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[34] D. Stronach, *Pasagardae. A Report on the Excavations Conducted by the British Institute of Persian Studies from 1961 to 1963* 12 (1978) 105–12.

To summarize, a complex irrigation system, divided into two parts, was used in the garden of the Piazza d'Oro. The first part watered most of the garden by allowing the water to seep into the transverse planting beds. In addition, openings (fig. 9, M) between the duct (fig. 9, E) and the area where the planting pits were located were used to flood the pits of the western half of the peripheral planting bed. The second part of the irrigation system worked in the traditional way and served only the parts of the garden that could not be reached by the first, revolutionary method of irrigation (figs. 9 and 12), a method that up to now has not been found elsewhere in the ancient world.

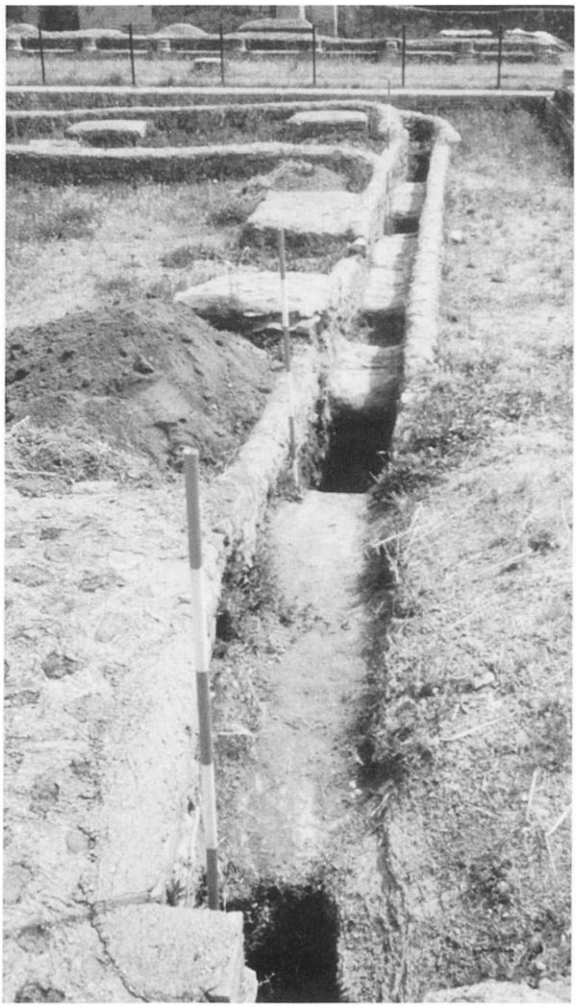

Fig. 17. Piazza d'Oro. Pits for irrigation in the eastern half of the irrigation duct around the garden. (Photo: E. Salza Prina Ricotti)

THE PLANTINGS

The conditions at Hadrian's Villa are not favorable for the preservation of ancient plant material, such as is preserved in Vesuvian sites. Even so, we can now perhaps speculate about the possible plantings in the Piazza d'Oro, taking into consideration the size of the planting pits and trenches, the alkaline nature of the soil (see appendix), aesthetic demands, including visibility from the portico, and our meager information from ancient authors about landscaping.

The plant material in ancient Roman gardens was extremely limited. The garden was primarily a green one, doubly welcome in winter, and refreshingly cool in summer. The major plants were evergreen and produced beautiful gardens the year round. The plants in the more formal gardens that are mentioned most often by Latin authors are the ivy, the clipped box, laurel, acanthus, rosemary, and myrtle, and they are usually mentioned in connection with a villa garden. Our most detailed information is found in Pliny the Younger's letters describing his Tuscan (*Ep.* 5.6) and his Laurentine (*Ep.* 2.75) villas. At both villas there were clipped box hedges, always a favorite among the Romans. At his Laurentine villa rosemary filled any gaps in the hedge, for "box dries up if exposed in the open to the wind and salt spray, even at a distance." Pliny was especially proud of the box hedge clipped into different shapes, on the terrace in front of the colonnade, at his Tuscan villa. He also speaks of figures of animals facing each other, cut out of box. On the level below was a bed of acanthus. In other parts of the villa were more "box shrubs clipped into innumerable shapes, some being letters spelling the gardener's name or his master's." Pliny says the climate was too cold for myrtles at his Tuscan villa, but that laurels did very well there. The laurel groves at the Villa of Livia at Prima Porta are well known (Pliny *HN* 15.136; Suet. *Galba* 1). Cicero (*QFr.* 3.1.5) stresses the use of ivy in his brother's garden. He says the gardener (*topiarius*) "has so enveloped everything with ivy, not only the foundation walls of the villa, but also the spaces between the columns of the colonnade, that I declare the Greek statues seem to be in business as landscape gardeners, and to be advertising their wares." Pliny used ivy lavishly at his Tuscan villa. The open area of his riding ground was planted with ivy-clad plane trees, "green with their own leaves above, and below with the ivy which climbs over trunk and branch and links tree to tree as it spreads across them." Martial (3.58.1–3) speaks scornfully of unfruitful villas planted in many idle myrtles, widowed planes (i.e., without vines), and clipped clumps of box. Trees are seldom mentioned in peristyle gardens.[35] The four plane trees around the little fountain in a small courtyard in Pliny's Tuscan garden are exceptional. The large garden of his Laurentine villa, however, was thickly planted with mulberries and figs.

Flowers are seldom mentioned, but amid the greenery, in season, there would also have been the dainty white flowers of the myrtle, the greenish-yellow blossoms of the ivy, the pale yellow flowers of the laurel, and accents of color if the garden included oleanders, roses, or violets. Flowers, however, played a very incidental role. The violet and the rose are the only flowers mentioned in Pliny's gardens. The terrace in front of the long arcade in his Laurentine villa was scented with violets. The "violet beds" (*violarii*) mentioned by the Latin authors were probably stock.[36] At his Tuscan villa, there were roses in the sunny spots amid the plantings of his riding ground. Modern taste would prefer more flowers, but among the Romans flowers were used most often in garlands and crowns. Our most detailed information about the flowers known to the ancient Romans is found in the famous passage of Pliny (*HN* 21.14–69) in which he describes the flowers used in making garlands. Most favored were the rose, the Madonna lily, and the violet. Many of the garland flowers were wildflowers, such as grew in the meadow "bright with wildflowers" outside Pliny's Tuscan villa; the meadow, he says, is as well worth seeing for its natural beauty as his formal garden. Pliny the Elder says that of all the flowers used for garlands by the Romans, only the rose and the violet were cultivated in their gardens.

The double planting pits that encircle the Piazza d'Oro garden were certainly large and deep enough to accommodate trees. The pits are approximately the same size as those in the forum at Cosa, in which trees were planted. Since the pits in the Piazza d'Oro garden are rather close together, any broad spreading trees would need to have been clipped regularly. But the Roman gardener was skilled in this art. Any tall plantings would also have been pruned to free the view of the garden from the portico. The laurel (*Laurus nobilis* L.), which grows to a height of 10 m, would fit this setting. The beautiful holm-oak (*Quercus ilex* L.) is another possibility.[37] The *ilex,* as it was known to the Romans, is frequently mentioned by Latin authors, and the adjectives *iligneus* and *ilignus* (of the holm-oak) are also found. This beautiful evergreen tree grows to a great size, but any tree planted in a pit would be dwarfed, for the stone pit would have the same effect as a big pot. The oleander (*Nerium oleander* L.) is perhaps another possibility.[38] It grows wild today in various parts of the Mediterranean area, as it did in antiquity. It is rarely mentioned by ancient authors, but the Greek physician and herbalist Dioscorides (4.82) knew it not only growing wild, but as an ornamental shrub. Pliny (*HN* 17.98) gives directions for growing it, both by layering and by seed, which suggests that it was regularly planted. We cannot assume that because the oleander is infrequently mentioned that it was not used. In the views of gardens painted on garden walls to make a small garden appear larger, the oleander is the plant most frequently pictured. It is shown behind the painted fence, where plants grow luxuriously and untamed, unlike the formal garden that was presumably planted in front of the fence, so it is probable that it was found more often in an informal garden than in a formal one, such as the Piazza d'Oro garden. But we did find plentiful remains of oleander preserved by the volcanic ash of Vesuvius in the sculpture garden beside the huge swimming pool in Poppaea's villa at Oplontis.[39] It was found at Oplontis, however, in conjunction with statuary, as it is pictured in the garden paintings.

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[35] For archaeological evidence for trees in peristyle gardens at Pompeii, see Jashemski (supra n. 12) I, 26–31.

[36] It was not at all unusual in antiquity to give the same name to entirely different plants. According to Pliny (*HN* 21.27, 130–31) there were several kinds of violets, "the purple, the yellow and the white." But it is difficult to identify all the violets referred to by Pliny, for his descriptions are by no means precise. He says that the purple violet is a wild violet, with a broader leaf, coming straight from the root. Fortunately, actual specimens of wild violets have been found in the carbonized hay in the *villa rustica* at Oplontis, and they can be identified as *Viola arvensis* Murray (Jashemski [supra n. 12] I, fig. 405 on 270, 271, and 322). Dioscorides (4.122) gives a good description of the purple violet that he says has pleasant-smelling little blossoms that spring from the center of the root on long stalks and has leaves similar to the ivy. Botanists are agreed that the flower described is our sweet violet, *Viola odorata* L. The white violet, however, according to Pliny, was a cultivated flower. The Greek author Theophrastus (born ca. 370 B.C.), from whom Pliny frequently borrows, says this violet has woody roots, leaves on the stems, but no root leaves (*Hist. pl.* 6.6.2–3, 11; 6.8.5). This violet, he says, varies especially in color, and has a life of three years. Botanists agree that this plant is the stock (*Matthiola incana* (L.) R. Br.). It has a very fragrant flower. Pliny says that the most esteemed is the yellow variety and that this plant was important in medicine. It is difficult to identify it with certainty, but it is usually believed to be the wall-flower (*Cheiranthus cheiri* L.). The other "violets" mentioned by Pliny—the Tusculan, Marine, and Calatiana violet—cannot be identified.

[37] The imprint of a *Quercus ilex* leaf in the solidified volcanic ash or mud found in a villa at Stabiae is displayed in the new Antiquarium at Boscoreale (inv. no. 497/2).

[38] The imprint of an oleander leaf was found in the Villa of San Marco at Stabiae (Boscoreale Antiquarium inv. no. 497/1).

The large beds on each side of the euripus would have had lower plantings. The difference in depth between the large planting pits encircling the garden and the planting trenches in the beds on each side of the euripus would suggest a difference in plantings. Clipped box, so favored by the Romans, is a definite possibility. Perhaps it was clipped in topiary shapes. Myrtle seems a less likely choice. Excavation of the still unexplored planting trenches will, we hope, shed more light on the planting pattern. All of the plant material suggested thrives in an alkaline soil. Since the entire garden was covered with a meter of soil above the planting pits and trenches, it is possible that there were also some lower plantings.

CONCLUSION

Our excavations have revealed a variety of exciting ancient gardening techniques. They have answered many questions—and they have raised others. The genius of Hadrian, the emperor-architect, makes his villa unique, not only for the extraordinary beauty of its gardens, but also for its sculpture, its daring architectural creations, and its technical innovations.

In the middle of the plantings, the water in the marble euripus of the Piazza d'Oro would have reflected the imposing architecture, giving an effect such as can be seen today when one visits the lovely Taj Mahal and sees it reflected in the long pool that stretches in front of it. This is the effect that Hadrian would appear to have carefully planned in various parts of his villa, including, as we have seen, the Canopus.

It is becoming increasingly evident that the garden was an integral aspect of Roman architecture, both domestic and public. Only in recent years, however, have ancient gardens become a subject of serious investigation by many scholars.[40] To this increasing wealth of information about ancient gardens, the magnificent gardens of Hadrian's Villa add an important chapter.

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Appendix: The Soils of Hadrian's Villa

JOHN FOSS

Five soil profiles were described and sampled at Hadrian's Villa, and one profile was selected approximately 0.2 km to the west to determine soil characteristics on a similar landscape outside the villa. The samples were examined to determine relative ages of sediments, landscapes, and soils; develop an environmental history of the sites; and evaluate the influence of the land resources on habitation. The morphological and chemical analyses of soils are especially useful in providing information on the genesis and potential productivity of soils.

The soils in the gardens of the Piazza d'Oro and Canopus are developed in volcanic tuff, or tufa. The soils are characterized by loam-textured sediment overlying a hardened tuff. In the garden of the Piazza d'Oro, the unconsolidated soils are generally less than 1 m in thickness over the hardened tuff. The soils in the gardens were disturbed by excavating and filling activities, and in the case of the Piazza d'Oro, severe soil disturbance occurred during the construction of a drainage-irrigation system. Artifacts were noted in the upper 50–60 cm of most of the soils examined at Hadrian's Villa.

Table 2 summarizes some of the physical and chemical characteristics of the surface and subsurface horizons of the soil profile sampled at Piazza d'Oro. The

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[39] Jashemski (supra n. 12) I, 314, figs. 486–88; II, 299–300.

[40] A publication, *The Gardens of the Roman Empire*, edited by W.F. Jashemski is well under way. It will contain interpretative chapters, followed by a descriptive catalogue, with bibliography, plans, drawings, and photographs of every garden in the Roman Empire known from excavation, literary sources, epigraphy, the Marble Plan, wall paintings, or mosaics. Each garden or topic will be discussed by the scholar who has excavated or made a special study of the particular garden or subject.

Table 2. Physical and Chemical Properties of a Soil Profile (P1) at the Piazza d'Oro, Hadrian's Villa

		Particle Size Analyses (%)					Extractable Ions (ppm)		
Horizon	Depth (cm)	Sand	Silt	Clay	pH	Total C %	Ca	P	K
Ap1	0–8	43.2	31.0	25.8	7.7	6.3	52,894	942	7,546
Ap2	8–14	37.6	39.9	22.5	7.9	2.8	53,338	799	4,618
AB	14–28	36.9	40.7	22.5	7.9	2.0	45,748	940	5,521
2Bw	28–50	27.3	45.3	27.3	8.0	2.8	76,383	733	3,238
2Bt/BC	50–64	41.6	54.6	23.7	8.0	1.5	51,663	495	6,324
2CR	64+	—	—	—	—	—	—	—	—

C = carbon, Ca = calcium carbonate, P = phosphorus, and K = potassium.

textures of the soils are mainly loams, with sand, silt, and clay contents averaging 40%, 33%, and 25%, respectively. These loamy soils have good water-holding capacities and would have been easy to till. The soils are alkaline with pH values ranging from 6.9 to 8.0; soils in the Piazza d'Oro have a pH range of 7.7 to 8.0. The high base status of the volcanic tuff parent material and the addition of irrigation water with large quantities of calcium (Ca) are probably responsible for the high pH values in the soils. Elemental analyses showed high levels of calcium in all of the soils. In the Piazza d'Oro, for example, the calcium contents exceeded 50,000 ppm in the subsurface (28–64 cm). Secondary calcium carbonate also formed a white precipitate at the contact between the soil and the hardened tuff; the precipitation takes place when the percolating water charged with calcium is stopped by the slowly permeable tuff. The lower calcium content of the soil in the Canopus garden probably indicates less irrigation activity at this site. The gardens were quite fertile, as evidenced by the high levels of organic matter (C), phosphorus (P), and potassium (K).

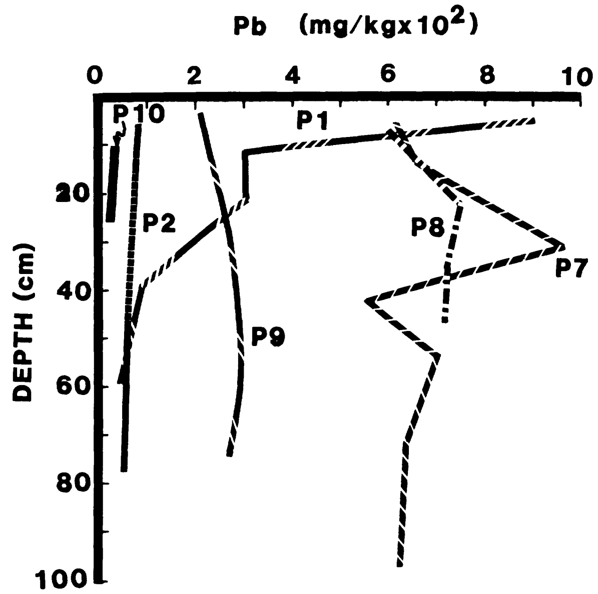

Fig. 18. Distribution of extractable lead in soils at Hadrian's Villa and a profile sampled off site

One of the most interesting findings in the chemical analyses was the high level of lead (Pb) found in the soils at Hadrian's Villa (table 3). Soils at the villa had approximately 2 to 28 times the Pb content of a profile sampled outside the villa (profile 10, table 3). Figure 18 shows the distribution of Pb with depth in the profiles sampled at the villa and the comparative profile sampled off site. The Pb distribution in profile 1 at the Piazza d'Oro shows over 900 ppm Pb in the

Table 3. Content of Acid-extractable Metals in Representative Soils at Hadrian's Villa and a Profile Sampled Outside the Site

		Extractable Metals (ppm)					
		Pb		Cu		Zn	
Location	Profile	Range	Mean	Range	Mean	Range	Mean
Piazza d'Oro	1	47–893	326	12–31	24	5.6–16.8	8.9
Canopus	2	48–74	57	13–24	18	6.6–07.5	7.1
West of Piazza d'Oro	7	557–953	675	41–55	48	12.7–20.4	17.8
North of Piazza d'Oro	8	617–764	703	35–42	38	11.6–13.7	12.7
North of Pecile	9	209–297	255	13–15	14	3.6–14.2	6.5
Outside Villa*	10	19–29	24	3–13	8	4.2–06.9	5.5

Pb = lead, Cu = copper, and Zn = zinc.
*Soils were sampled 0.2 km west of Hadrian's Villa on a similar landscape as the villa.

surface and then drops rapidly in the subsoil; this distribution results from the Pb being strongly attached to organic matter in the surface horizon. Profiles 7 and 8 are composed entirely of former surface horizon material; thus, the Pb content is high throughout the profiles.

The high content of Pb in the soils of the villa is undoubtedly the result of activity on the site. The variability of Pb contents in the profiles sampled seems to indicate some localization of elevated Pb contents. For example, the Canopus garden had an average Pb content of 57 ppm in contrast to other sites in the villa that had more than 200 ppm Pb. Additional profiles will need to be sampled, however, to understand fully the Pb distribution in soils of the villa. The high levels of Pb occurring in the soils would have been a pollution hazard to the people in Hadrian's Villa. The agents responsible for the high Pb contents of soils are unknown. The elevated levels of other pollutants such as copper (Cu), zinc (Zn), and arsenic (As) may indicate some form of industrial contribution of heavy metals. Irrigation water is not likely to have been a major contributor of heavy metals to soil systems in the villa.

It is hoped that archaeologists working on other aspects of life at the villa may in the future find the explanation for the elevated Pb content in the soils.

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Roman Gardens in Tunisia: Preliminary Excavations in the House of Bacchus and Ariadne and in the East Temple at Thuburbo Maius

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Roman Gardens in Tunisia: Preliminary Excavations in the House of Bacchus and Ariadne and in the East Temple at Thuburbo Maius

WILHELMINA F. JASHEMSKI

Abstract

Tunisia furnishes a most promising field for the study of Roman gardens. A survey of the major sites in 1988 and 1990 showed that the court in some houses was paved with mosaics, but in the great majority of houses there was soil in the courts. Some gardens had been replanted, but in no case had the soil been examined for evidence of ancient plantings.

Our preliminary excavations in 1990 at Thuburbo Maius discovered well-preserved evidence of plantings in both the peristyle garden and the courtyard garden of the luxurious House of Bacchus and Ariadne and in the East Temple. It was possible at the last occupation level to detect perfectly preserved outlines of the ancient roots. The soil formed when the roots decayed was of an entirely different texture and color from that of the surrounding soil, thus revealing the ancient planting pattern.*

The African provinces furnish a most promising field for the investigation of Roman gardens. This was first called to my attention by the late Frank E. Brown. Each year when he came from the American Academy in Rome to visit the Vesuvian gardens that we had excavated during the current season, he would talk of the possibilities in Tunisia and urge that Tunisian gardens be our next project. More recently Margaret A. Alexander urged me to come to Tunisia. More houses have been excavated in North Africa than in any other part of the Roman Empire outside of Italy.

The typical Romano-African house had no atrium.[1] The various rooms were grouped around a court usually enclosed by a portico. In 1988 and 1990 I, together with Professor Alexander, examined the major sites in Tunisia, locating all possible gardens. We found that the court in some houses was paved with mosaic, but that the great majority had soil in the court. Some of the gardens had been replanted as, for example, in the House of the Peacock[2] and the Domus Sollertiana[3] at El Jem (ancient Thysdrus),

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* An earlier shorter version of this paper was presented at the 95th Annual Meeting of the Archaeological Institute of America in Washington, D.C., 29 December 1993: *AJA* 98 (1994) 321 (abstract). I gratefully acknowledge the support and encouragement of the Institut National du Patrimoine, Tunis. I am also deeply grateful to Aïcha Ben Abed Ben Khader, Director of Excavations at Thuburbo Maius, and Margaret A. Alexander, Codirector, *Corpus des mosaïques de Tunisie*, who are currently publishing the mosaics in the House of Bacchus and Ariadne and the East Temple, for their considerable help. Thanks are also due to the workmen. Funds for my research were provided in part by Dumbarton Oaks. John Foss generously undertook soil analyses (see Appendix) and served as photographer in 1990. Henry Ferry served as photographer during our 1988 season. Special thanks are due Victoria I, who made the plan of the courtyard garden in the House of Bacchus and Ariadne, as well as the reconstruction of the plantings and the beautiful scale model of the garden. Frederick G. Meyer of the U.S. National Arboretum, Washington, D.C., who has worked closely with me on the plantings in the gardens that I have excavated, and Margaret Alexander both read this paper and gave valuable suggestions. Gratitude is also due the editors of *AJA* for their careful editing.

The following abbreviations are used:

CMT	*Corpus des mosaïques de Tunisie.*
Jashemski	W.F. Jashemski, *The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius* I (New Rochelle 1979), II (New Rochelle 1993).

[1] There is no detailed treatment of the Romano-African house. R. Rebuffat, "Maisons à péristyle d'Afrique du Nord: répertoire de plans publiés," *MEFR* 81 (1969) 659–724, catalogues the houses with peristyles that have been published, but he includes only those houses having a court with a portico on two or more sides. Rebuffat does not consider, however, the possibility of any plantings. In a continuation of this article, Rebuffat (*MEFRA* 86 [1974] 445–99), following a slightly less rigid basis for inclusion in his catalogue, adds 39 new houses and gives additional material for 10 houses in the first article, making a total of 152 houses. See also A. McKay, *Houses, Villas and Palaces in the Roman World* (Ithaca 1975); A. Lézine, *Architecture romaine d'Afrique, recherches et mises au point* (Paris 1964); and Y. Thébert, "Private Life and Domestic Architecture in Byzantium," in P. Veyne ed., *A History of Private Life from Pagan Rome to Byzantium* (Cambridge, Mass. 1987) 319–409 for brief descriptions.

[2] L. Foucher, *Découvertes archéologiques à Thysdrus en 1961* (*Notes et Documents* V, Tunis 1962) 2–14 and plan p. 2.

[3] Foucher (supra n. 2) 15–25 and plan p. 26.

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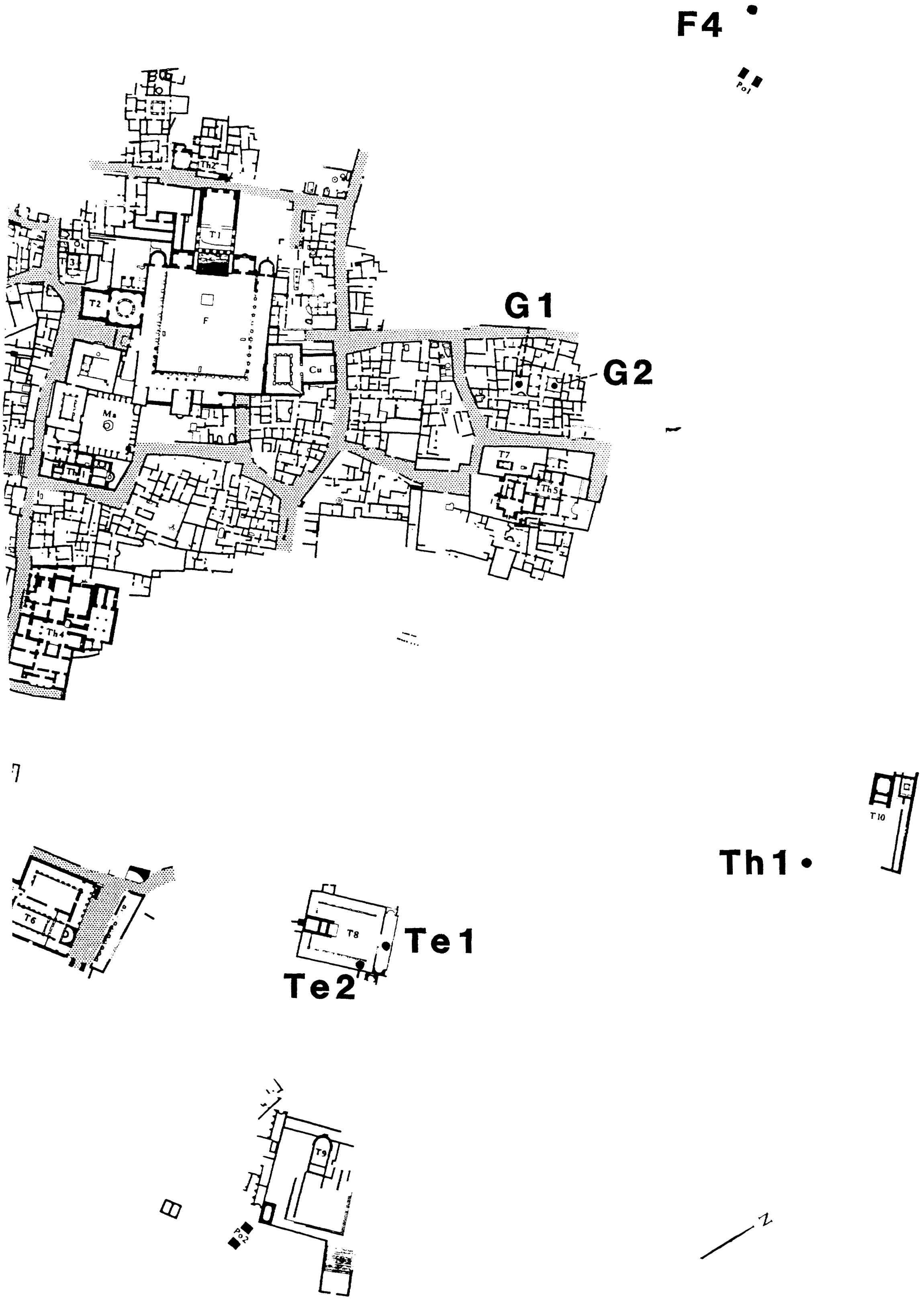

Fig. 1. Plan of Thuburbo Maius, with soil sampling sites indicated. (Courtesy *CMT*, plan 34, with sampling sites added by J. Foss)

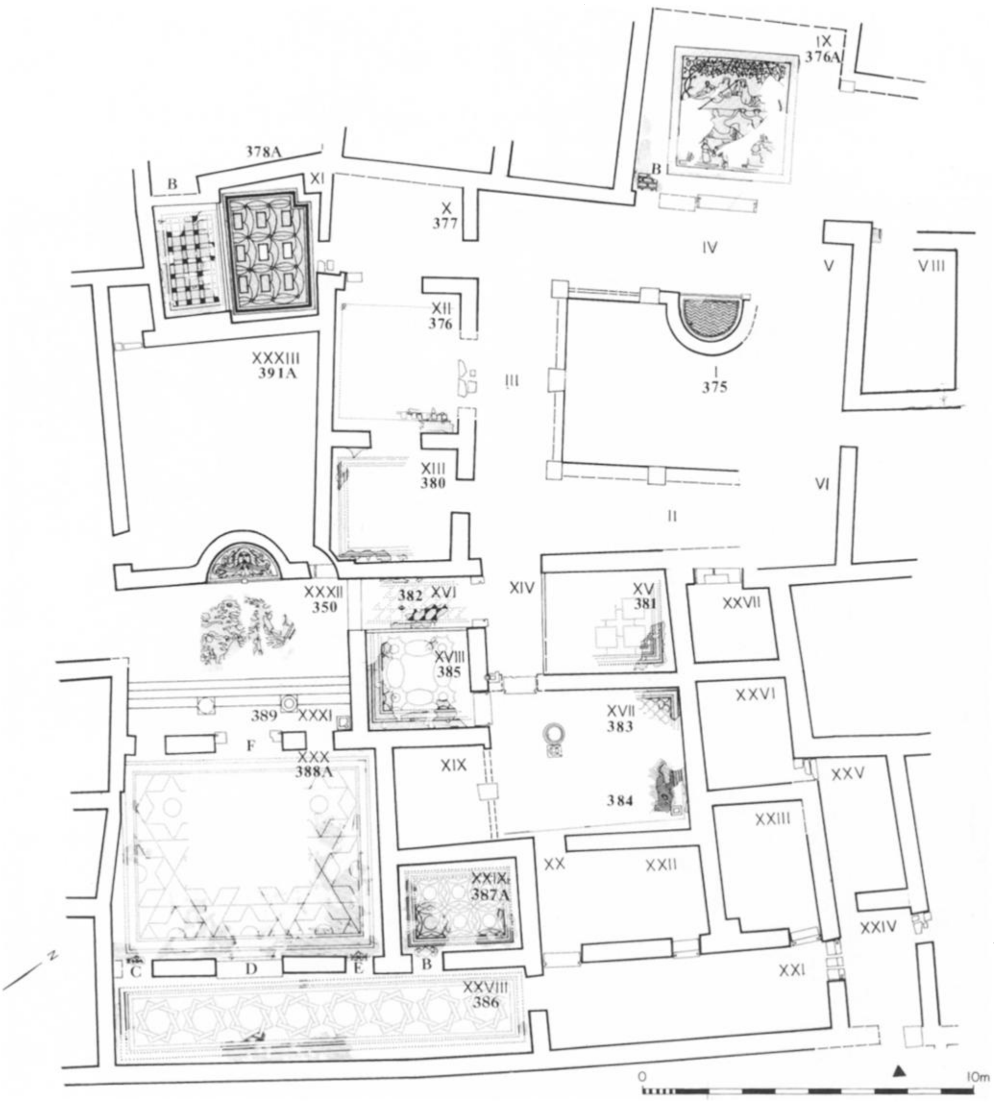

Fig. 2. Plan of residence area of House of Bacchus and Ariadne, Thuburbo Maius. (C. Peirce, courtesy *CMT*)

the House of the Cascade at Utica,[4] and the Maison de la Volière at Carthage.[5] The soil, however, had not been examined before planting so all evidence of the ancient plantings was destroyed. We also found gardens connected with public buildings.

The Tunisian gardens are not perfectly preserved, as are those in the Vesuvian sites. But I believed that if the soil had not been disturbed by modern roots, and if other conditions such as the character of the soil and drainage were favorable, it might be possible to find evidence of ancient roots. No subsoil excavations had previously been carried out.

We began work at Thuburbo Maius (fig. 1), located 53 km to the southwest of Tunis, in the fertile Miliana Valley, famous in antiquity for its production of grain, olives, and fruit, as it still is today. Hadrian made Thuburbo a municipium, and under Commodus it became a colony. During this period its most beautiful buildings were built. After the crisis in the third century, Thuburbo saw a rebirth in the fourth century.[6]

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[4] M. Alexander et al., *CMT*, *Utique* I.1 (Tunis 1973) 21, 27–29, 47–48, plan 7 and pls. VIII, XXII, XXV.

[5] A. Ennabli, "La maison de la Volière à Carthage: l'Architecture," in *Mosaïque. Recueil d'hommages à Henri Stern* (Paris 1982) 129–45; W. Ben Osman, "Étude des pavementes de la Villa de la Volière," in *Mosaïque* 147–56.

[6] *PECS* 916, s.v. Thuburbo Maius (A. Ennabli).

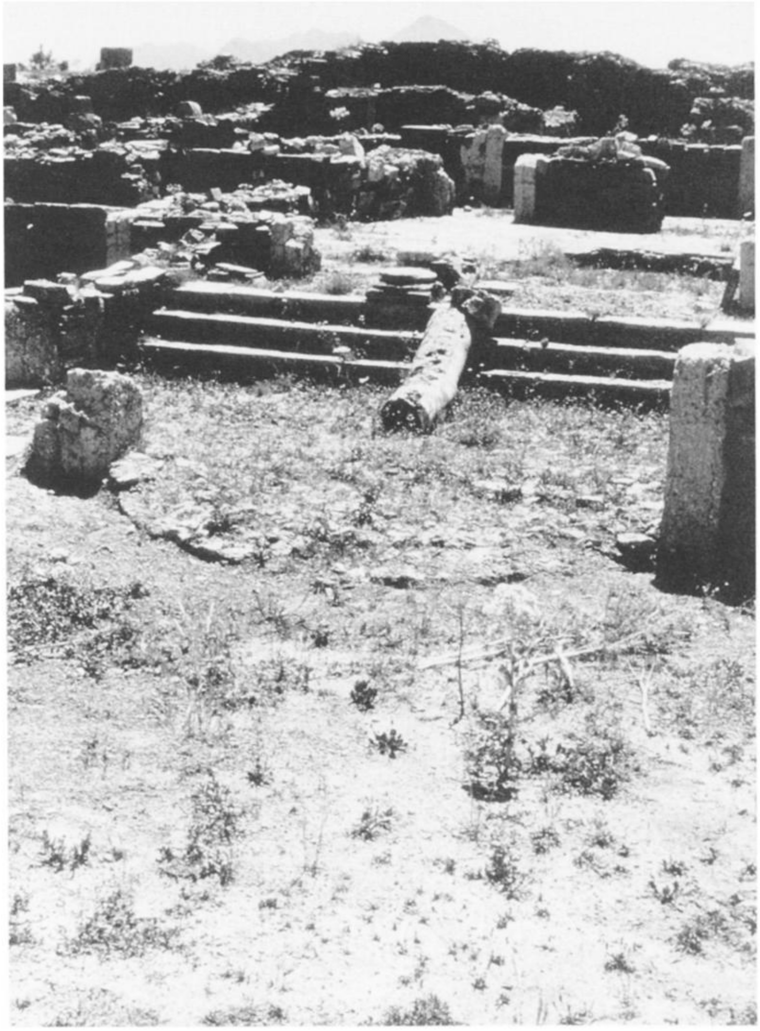

Fig. 3. Triclinium of House of Bacchus and Ariadne from courtyard garden. Semicircular area shows where mosaic basin was removed. (Photo H. Ferry)

HOUSE OF BACCHUS AND ARIADNE

The House of Bacchus and Ariadne,[7] located to the northeast of the forum, was excavated in 1925 and in its present form dates from the early fifth century. It occupies most of an insula. The southwestern part of the house, devoted to business, was given over to the production of olive oil. The elegant residence area on the northeast (fig. 2) had two gardens, one a peristyle garden, one a courtyard garden, each with a shallow semicircular pool paved with mosaic, opposite an important room, as is typical in Tunisian houses.

Courtyard Garden opposite Large Triclinium

We began work in the garden (XXXIII on fig. 2) opposite the handsome triclinium (fig. 3), the largest and most important room in the residence area of the house. The garden was located three steps below the triclinium, which had a good view of the garden, impressively framed by two columns. Only one fallen column now remains. The mosaic basin (fig. 4) projected into the garden and was decorated on the bottom with the head of Oceanus.[8] At the time that it was excavated a pipe indicated where a fountain had jetted from the mouth of Oceanus.[9]

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[7] M. Alexander and A. Ben Abed Ben Khader, *CMT, Thuburbo Majus* II.4 (Tunis 1994) 39–66.

[8] Alexander and Ben Abed Ben Khader (supra n. 7) no. 391A and pls. XXVI, XXVII, LXXV, and LXXVI.

[9] R. Lantier, "Un bassin à mosaïques de Thuburbo Majus," *BAC* 1944, 280–82. The basin was 2.20 m in diameter and 1.10 m deep.

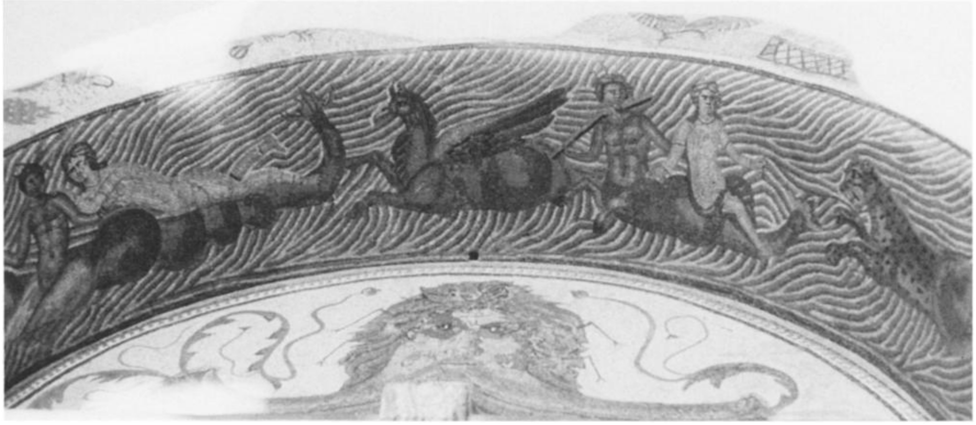

Fig. 4. Mosaic basin from House of Bacchus and Ariadne, Bardo Museum inv. 1399. (Photo H. Ferry)

Some realistic artichokes (*Cynara scolymus* L.), a popular motif in Tunisian mosaics, are preserved on the rim.[10] On the inside wall were Nereids and sea monsters.

Before we began excavation in this garden, preliminary soil auger tests were used to identify the buried Roman surface (fig. 1). We then removed the 25–30 cm of soil that had accumulated through the centuries, probably due to wind-transplanted soil material after the site was abandoned by the Romans. Detailed soil descriptions and analyses were made in this garden, as well as in the peristyle garden in this house, and also at the East Temple, all within the ancient city (see Appendix). These soils were then compared with the soil of the outlying countryside.

When we reached the last occupation level in these gardens we were successful beyond our greatest expectations. In the courtyard garden, in our first trench we found at ground level the perfectly preserved outline of the root of a small tree 23 cm in diameter. The soil formed when the root decayed was of an entirely different texture and color from that of the surrounding soil (fig. 5), making the shape of the ancient root at ground level as distinct as those of the lapilli-filled root cavities in the Vesuvian gardens. We soon also found three large tree-root cavities, the largest dimension at ground level 40–50 cm in diameter, three smaller tree-root cavities 20–30 cm in diameter, and 37 smaller cavities. Most of these were 5–10 cm in diameter (fig. 6).

We were greatly baffled by three large rectangular cavities of approximately the same size (36 × 72 cm, 40 × 60 cm, and 46 × 62 cm). When we uncovered them, they had the same appearance as the decayed root cavities, differing in color and texture from the surrounding soil, but they were only a few centimeters deep. They obviously represented decayed wood, probably wooden bases that had been put in the garden to support some object. As we looked at their locations it seemed obvious that the two in the rear supported either a garden bench or table; the one in back of the mosaic basin in full view of the triclinium perhaps supported a small table.

Before we speculate on the plantings in the garden or the meaning of these shallow rectangular cavities (fig. 7), it might be helpful to consider other evidence that sheds light on both the plantings and the activities in the garden. Near the first tree we found an area (ca. 31 × 45 cm) in which there were numerous olive pits and bones that showed evidence of burning. Some were on the surface, and others were shallowly buried. Nearby was a place where there had been frequent fires, and shallowly buried underneath were more burned bones. The bones

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[10] The artichoke, which curiously has not been found pictured in the Vesuvian area even though it was much planted in Roman gardens, appears often in Tunisian mosaics. It was well known in North Africa in antiquity. Pliny (*HN* 19.152–53), who calls it *carduus*, says that in Carthage it yielded a large return from a small plot, and he gives directions for growing this table delicacy. Columella, in his manual on agriculture, lists in two different passages the vegetables to be planted in the garden, and the artichoke appears in each list (*Rust.* 10.235; 11.3.14) where it is called *cinara*. The artichoke (*Cynara scolymus* L.) is known today only in cultivation. Most authorities favor its derivation from a close relative, *Cynara cardunculus* L., the cardoon of the western Mediterranean, or from an eastern Mediterranean relative, *Cynara syriaca* Boiss. See D. Zohary and J. Basnizky, "The Cultivated Artichoke, *Cynara scolymus*: Its Probable Wild Ancestors," *Economic Botany* 229 (1975) 233–35. Vegetables are pictured more often in the Tunisian mosaics than in the Vesuvian wall paintings.

Table 1. Identifiable Animal Remains from the Courtyard Garden of the House of Bacchus and Ariadne

Field Number	Bone or Tooth
Sus scrofa L. (pig)	
1	radius
4	incisor
6	toe bone
7	epiphysis of toe bone
19	metapodial (distal end)
Ovis aries L. (sheep) or *Capra hirca* L. (domestic goat)	
2	radius
5	premolar
11	metapodial (distal end)
15	scapula (proximal end)
24	humerus (left distal end)
25	toe bone
26	astragalus
29	astragalus
cf. *Felis catus* L. (carnivore)	
17	humerus (proximal end)
Oryctolagus cuniculus L. (rabbit)	
23	humerus (left)

were identified by the late Henry Setzer of the Smithsonian Institution (table 1). Of the 34 bones found, five were those of pig (*Sus scrofa* L.), eight were sheep (*Ovis aries* L.) or domestic goat (*Capra hirca* L.), one was from a rabbit (*Oryctolagus cuniculus* L.), and one from a carnivore (cf. *Felis catus* L.), probably a pet cat. The other bones were too badly broken to be identifiable. The bones reminded me of those that I had found so often in the gardens of Pompeii, where they represented the debris of meals eaten in the garden.[11] But there was one difference. In the garden of Bacchus and Ariadne there were no cow bones, which were so common at Pompeii. I also had found many olive pits at various Vesuvian sites, but they were found in vineyards, or in a nursery, where they had dropped from the trees.[12] One find at Thuburbo was especially fortunate, that of an apricot pit found near the large tree root in the south corner of the garden. This was the first apricot pit that I had ever found, even though the apricot was also a popular food in ancient Pompeii, as it still is today.

The location of the cooking area behind the bench or table is logical. This house had no kitchen nor did others in the town. The cooking was done in the garden, or possibly also in the street, as is often the practice today. Servants would have cooked the food at the rear of the garden using the table or bench (which was screened by plantings) for both supplies and cooked food, preparatory to serving guests in the formal triclinium. On other occasions during the hot summer, we can imagine the family and perhaps special friends enjoying meals in the garden. When the accumulated bones became a problem, they were raked into the fire, and those not burned were shallowly buried. It was apparently not unusual for the Romans to leave debris from meals even on the floor indoors. Pliny (*HN* 36.184) describes a mosaic made by Sosus at Pergamum, which represented an unswept floor (*asarotos oikos*). A mosaic floor found on the Aventine in Rome (now in the Vatican) is considered by some to be perhaps a copy of the mosaic of Sosus.[13]

Peristyle Garden

The rooms on the northeast side of the residence area (fig. 2, right) in the house of Bacchus and Ariadne were also arranged around a garden, this one enclosed by a peristyle (fig. 8). The mosaic of Bacchus and Ariadne in the large room opening off the northwest portico gave the house its name.[14] The bottom of the semicircular basin projecting into the garden opposite this room was decorated with a wavy water motif, often used in such basins, the interior wall decorated with plants and imitation marble.[15] This part of the house would have been used by the family, the rooms on the southwest (fig. 2, left) for more formal purposes, although as we have seen, the garden in the formal part of the house was probably on occasion used by the family. Our preliminary excavations in the peristyle garden discovered a row of root cavities along the southwestern edge of the garden (fig. 2, left), but there was not time to excavate the entire garden. Roots arranged in a straight row would suggest a produce garden.

Plantings

As we consider the plantings in the garden opposite the large triclinium, our first impression is that this small garden (its two largest dimensions

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[11] Jashemski I, 95–96, 193, 217, 232, 254.

[12] There were olives or olive fragments at Pompeii in the large vineyard II.5: Jashemski I, 210; in the vineyard III.vii: Jashemski I, 358 and n. 24; in the small nursery I.xxi.3: Jashemski I, 357 n. 10 to ch. 13; and in the vineyard of the villa rustica at Boscoreale: Jashemski II, 288.

[13] Jashemski I, 96 and fig. 151.

[14] Alexander and Ben Abed Ben Khader (supra n. 7) no. 376 and pls. XVII–XVIII, LXXIV.

[15] Alexander and Ben Abed Ben Khader (supra n. 7) no. 375 and pls. XVI, LXXIII.

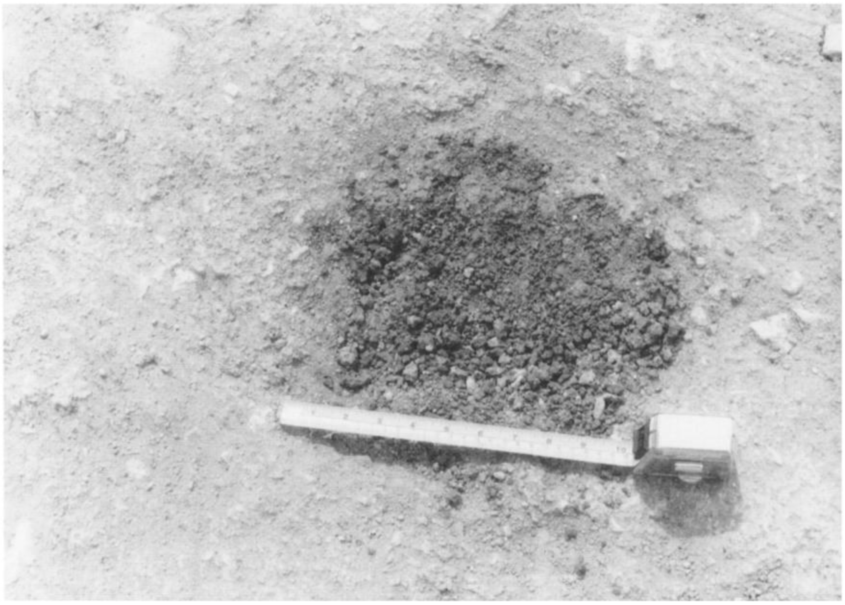

Fig. 5. Decayed tree root 23 cm in diameter (upper left in fig. 7). (Photo J. Foss)

6.5 and 6.7 m), with a total of 45 root cavities, appears greatly overplanted. A comparison with the plantings in the garden of the House of Polybius at Pompeii, which I excavated in 1973, is helpful. This garden, although somewhat larger (ca. 9.3 × 9.5 m), was also heavily planted (figs. 9–10). It had four much larger trees, one smaller tree, and eight trees espaliered against the west wall, making a total of

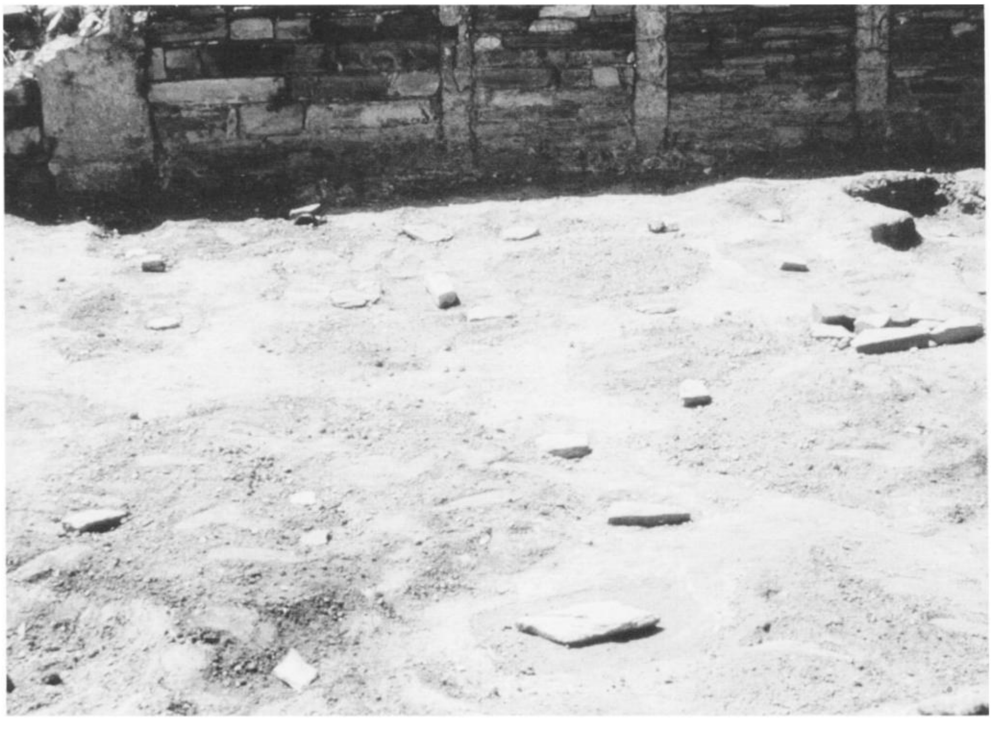

Fig. 6. Excavated garden in House of Bacchus and Ariadne. Stones mark locations of roots and wooden bases. (Photo J. Foss)

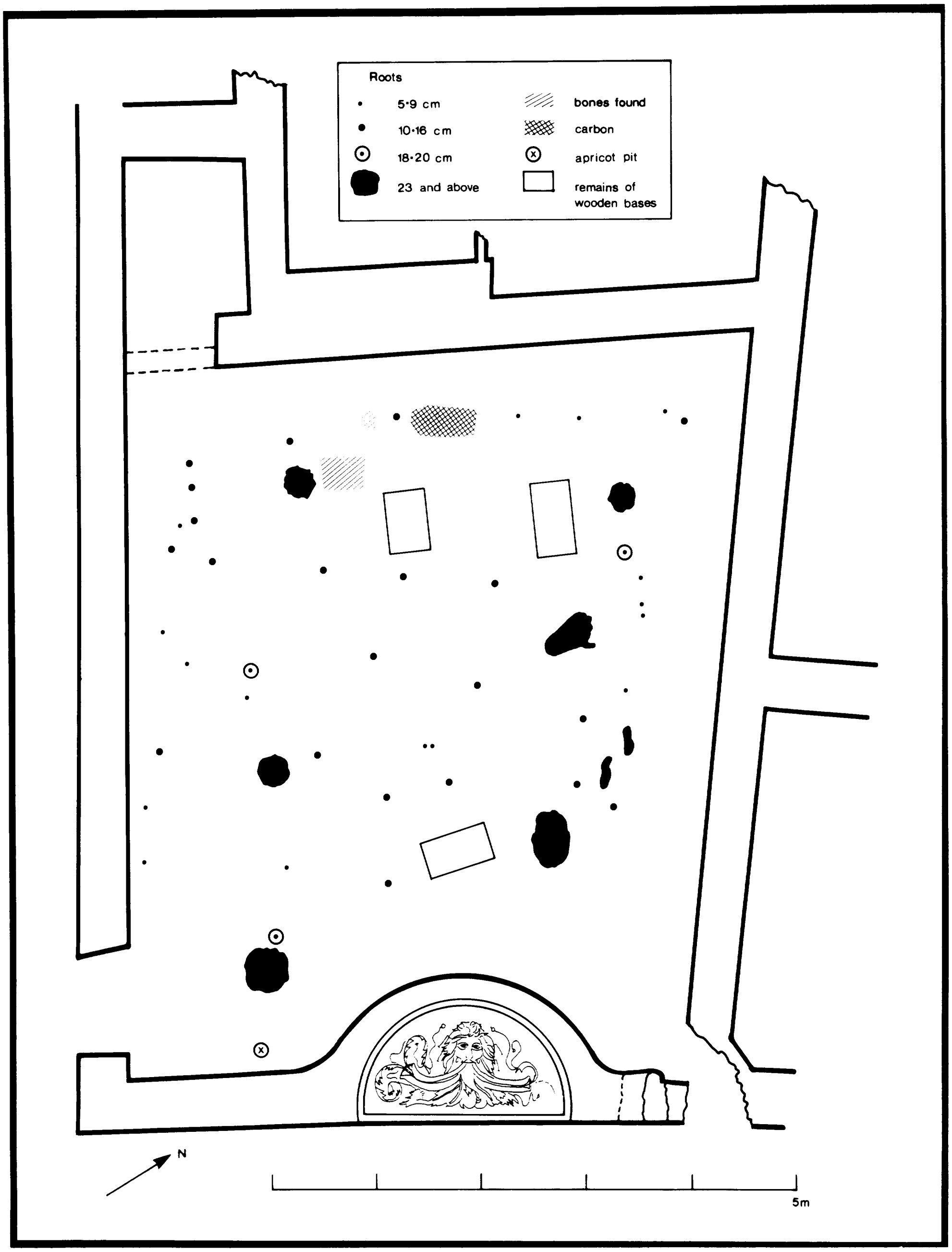

Fig. 7. Plan of courtyard garden, House of Bacchus and Ariadne. (Victoria I)

13 trees, plus 38 smaller cavities.[16] The plantings in the House of Polybius were a great surprise to scholars when we discovered them. The garden was so very different from the formal gardens with low plantings that had been thought to be typical. This raised certain questions concerning plantings in peristyle gardens and the extent to which trees may have been used. In my subsequent excavation of seven more peristyle gardens at Pompeii, I found that six had been informally planted with trees. Only one garden had been planted with small shrubs laid out in a formal design.[17] It became obvious that large trees in informally planted gardens were not unusual.

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[16] Jashemski I, 26–30 and figs. 35–39, 42; II, 249–51.

[17] Jashemski I, 30–32 and figs. 45–50.

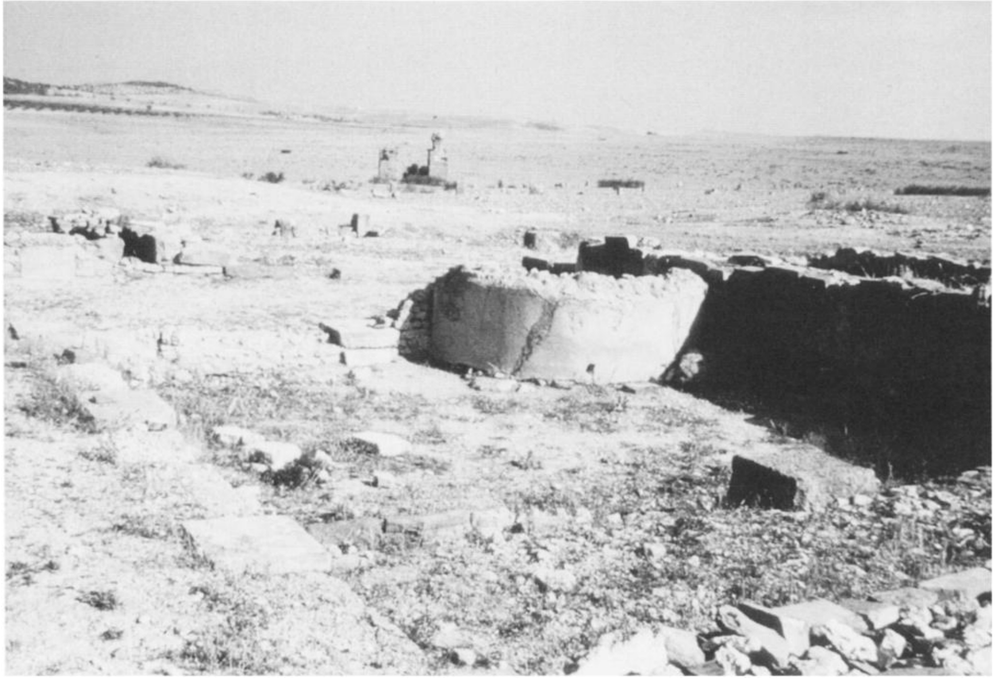

Fig. 8. Peristyle garden, House of Bacchus and Ariadne. (Photo R.L. Alexander)

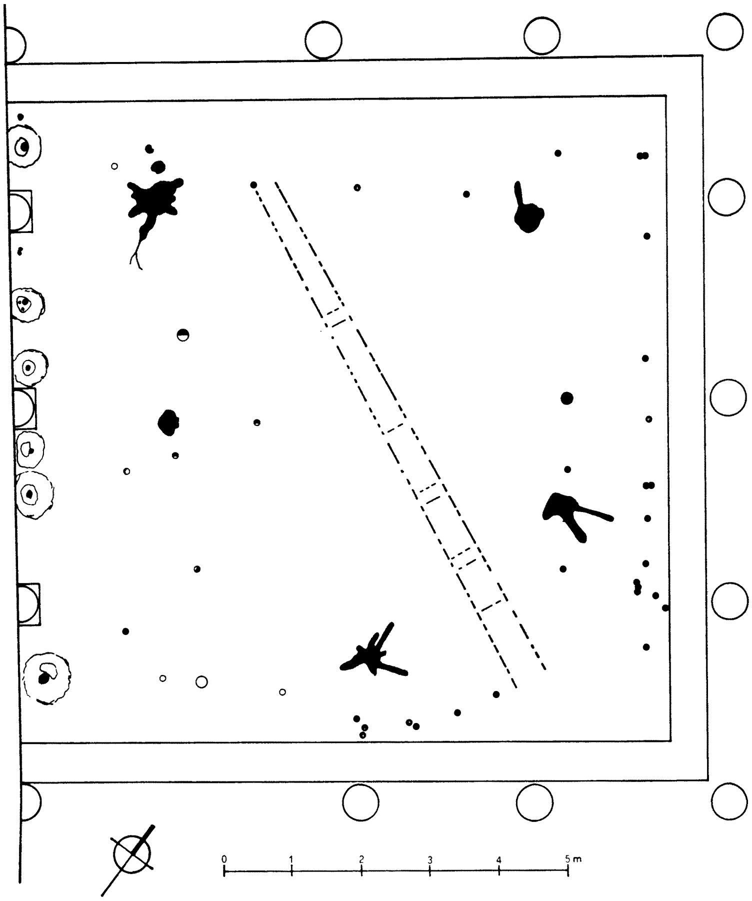

Fig. 9. Plan of House of Polybius at Pompeii. (S. Jashemski)

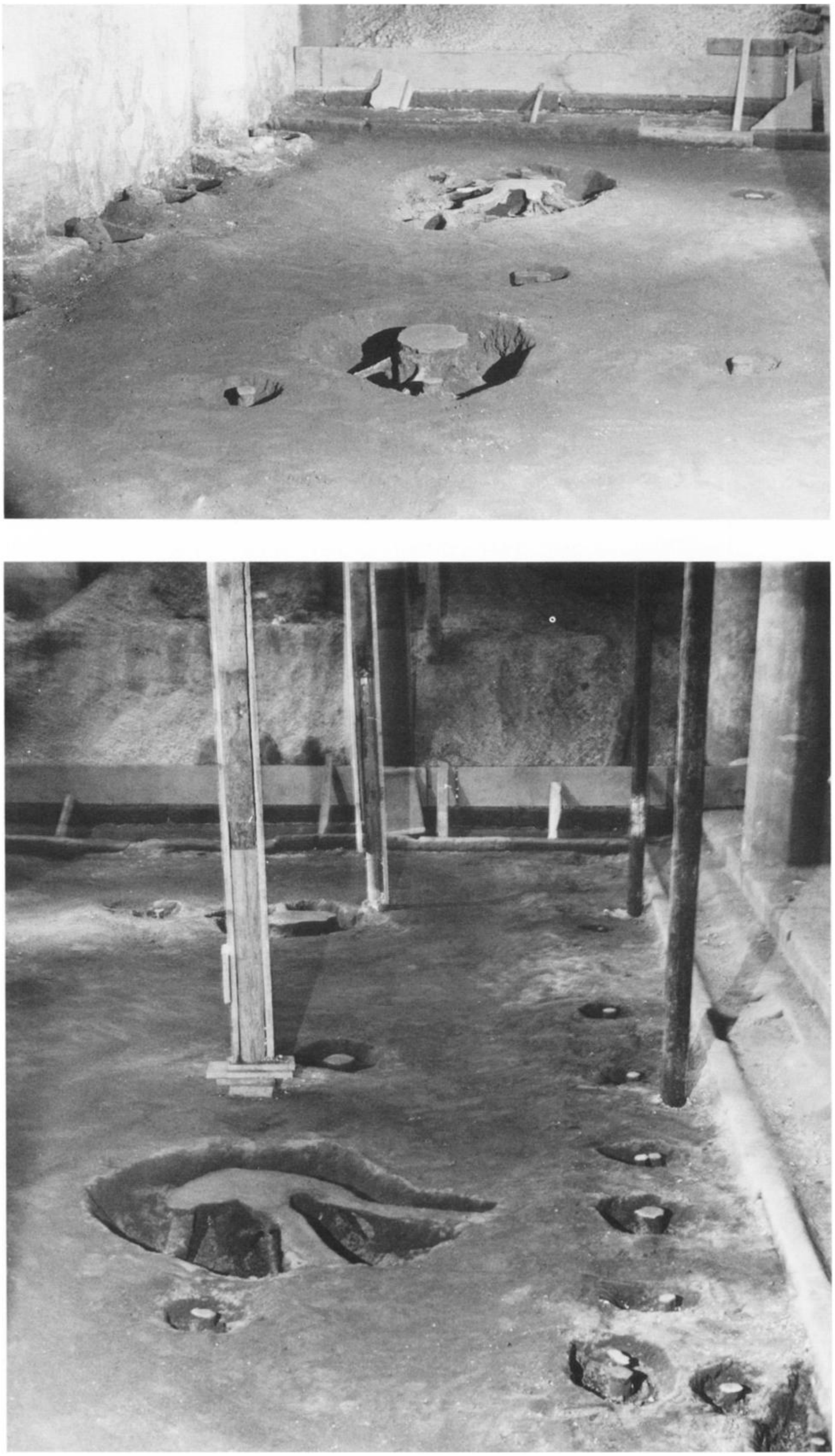

Fig. 10a–b. Casts of root cavities in east (top) and west parts of peristyle garden, House of Polybius. (Photos S. Jashemski)

The gardens in Tunisia were not preserved at an exact moment in history, as were those in the Vesuvian area. The trees and shrubs in the Tunisian gardens would have continued to grow for some time after the site was abandoned. What we uncovered in our excavations is not the garden at its prime. I suspect that some of the smaller roots perhaps represent seedlings that grew from unpicked fruit that fell from the trees. I found the root cavities of many such seedling trees that had been allowed to grow in the orchards and vineyards that I excavated in the Vesuvian sites. They were easily recognized because they were exactly like the many seedlings that had been allowed to grow in the modern orchards and vineyards in the area.

I think that we can now perhaps picture the garden as it was when it was enjoyed by the owner, his family, and friends (fig. 11). We can be safe in saying that the trees were probably food-bearing trees. Ancient Tunisia had few other trees. They knew the palm, pine, and cypress, but these trees would have been overpowering in such a small garden. The two street trees that are commonly used today are recent importations, the eucalyptus from Australia, and the beautiful purple-flowered jacaranda from South America. The two large tree-root cavities (on the right in fig. 7) are the proper size and shape for olive trees. The middle tree on the left was perhaps a fig tree. Both trees were also popular in Vesuvian gardens. It is tempting to suggest that the tree in the south corner was an apricot. The apricot pit was found near it, where it could have dropped from the tree.

We can only speculate about the identity of the smaller trees. There were many fruit and nut trees in ancient Tunisia. Tunisian mosaics give us a wealth of information about the fruits, vegetables, and fauna of the area, similar to that found in the Vesuvian wall paintings for the flora and fauna of that area.[18] The quince, pomegranate,[19] plum, citron, fig, peach, apple, pear, and grape are all pictured in the mosaics. There may have been a few grapes raised for table use in this garden, such as I have found in the Vesuvian gardens. Tunisian garden paintings are of little value for studying the flora. Only two have been found in Tunisia, where there are few walls preserved.[20] Nor do the wall paintings appear to have pictured plant material in detail. We likewise obtain little information from the written sources about Tunisian plants comparable to that available for Italy. Tantalizing bits of information from the lost work of Mago of Carthage[21] are preserved by the Roman writers. Mago's work was available to the Romans, for his 28 books had been translated from Punic into Latin by order of the Roman Senate (Columella *Rust.* 1.1.13; Pliny *HN* 18.22; Varro 1.1.10). Columella frequently quotes Mago on viticulture. He also gives Mago's directions for growing olives (*De arboribus* 17.1) and for preserving pomegranates (*Rust.* 12.46.5). Pliny says that among the trees that are grown from seed, Mago deals at length with those of the nut class and he gives in detail Mago's directions for planting almonds (*HN* 17.63, 130–31). He also gives Mago's instructions for planting olives (*HN* 17.93, 128–29), various kinds of pears (*HN* 17.131), and the laurel (*HN* 17.131), and for milling wheat and barley (*HN* 18.97–98). As we have seen, Pliny specifically mentions the artichokes of Carthage.[22] Inscriptions provide scattered mentions of Tunisian plants or plant products (figs, wine, etc.).

We must next consider the identity of the 37 smaller roots. Since this garden was viewed from the large triclinium used for formal entertaining (fig. 12), an effort would have been made to make it beautiful year-round. Fruit trees would have been beautiful when in flower or fruit, but they are deciduous. Only the olive tree is evergreen. Ornamental plant

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[18] For a description of every garden painting discovered in the Vesuvian area, and a discussion of the plant material pictured in them, see Jashemski II, Appendix II, 312–81. The plant material in the garden paintings will be discussed at greater length, along with plant material pictured in wall paintings elsewhere in the house, in W.F. Jashemski and F.G. Meyer eds., *The Natural History of Pompeii and the Other Vesuvian Sites*, which is now nearing completion.

[19] The pomegranate is not indigenous to Tunisia, but it was so common there in antiquity that the Romans referred to it as the Punic apple (*Punicum malum*, Pliny *HN* 13.112). Columella (*Rust.* 10.243) refers to the pomegranate tree as *punica.* The scientific name of the pomegranate (*Punica granatum* L.) retains the ancient Roman association of this fruit with the Punic city of Carthage. It is distributed in the wild from the Balkan region to northern India.

[20] In the House of the Peacock at Bulla Regia, poorly preserved painted plaster showed only the outline of a peacock, green foliage, and fragments of a painted lattice fence (R. Hanoune, *Bulla Regia* IV [Rome 1970] 79–80 and fig. 163). For the garden painting in the House of the Fish, which contained details of a wooden fence on which a white bird is walking, see Hanoune 80 and fig. 162. See also Jashemski II, 391, nos. 143–44.

[21] It is possible that Mago is a fictional character and that the work attributed to him represents the accumulated farming wisdom of the Carthaginians. See J.P. Mahaffy, "The Work of Mago on Agriculture," *Hermathena* 7 (1890) 29–35; K.D. White, *Roman Farming* (Ithaca 1970) 18.

[22] Supra n. 10.

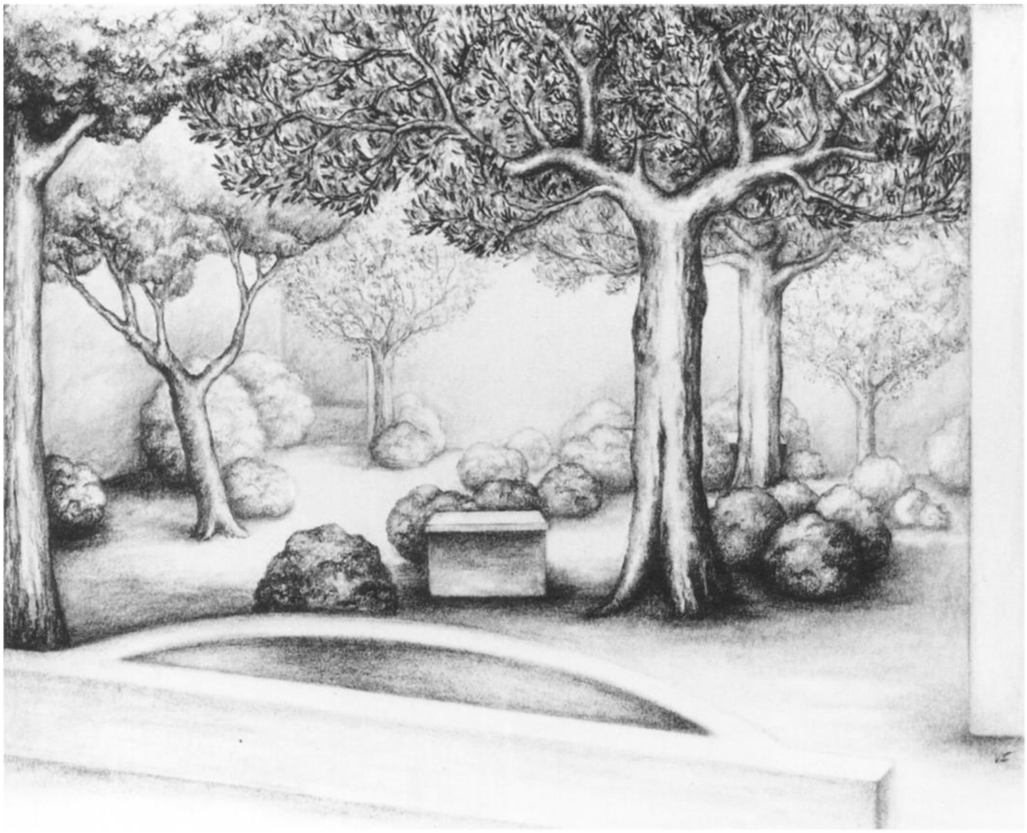

Fig. 11. Reconstruction of plantings in courtyard garden of House of Bacchus and Ariadne. (Victoria I)

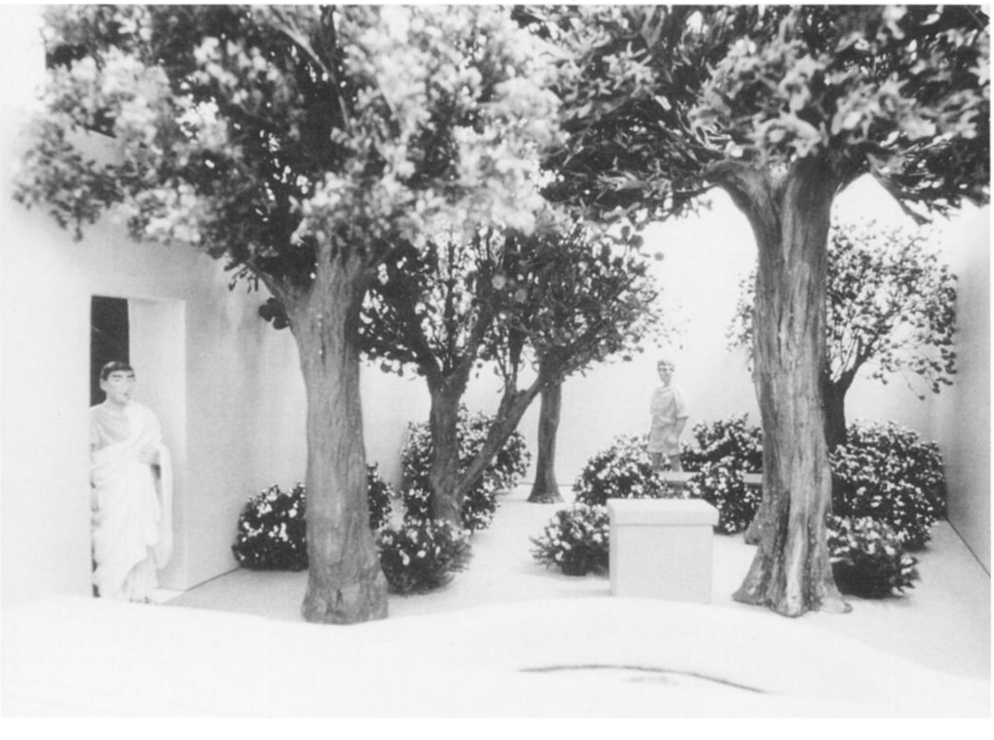

Fig. 12. View of courtyard garden in House of Bacchus and Ariadne, from triclinium. (Scale model: Victoria I)

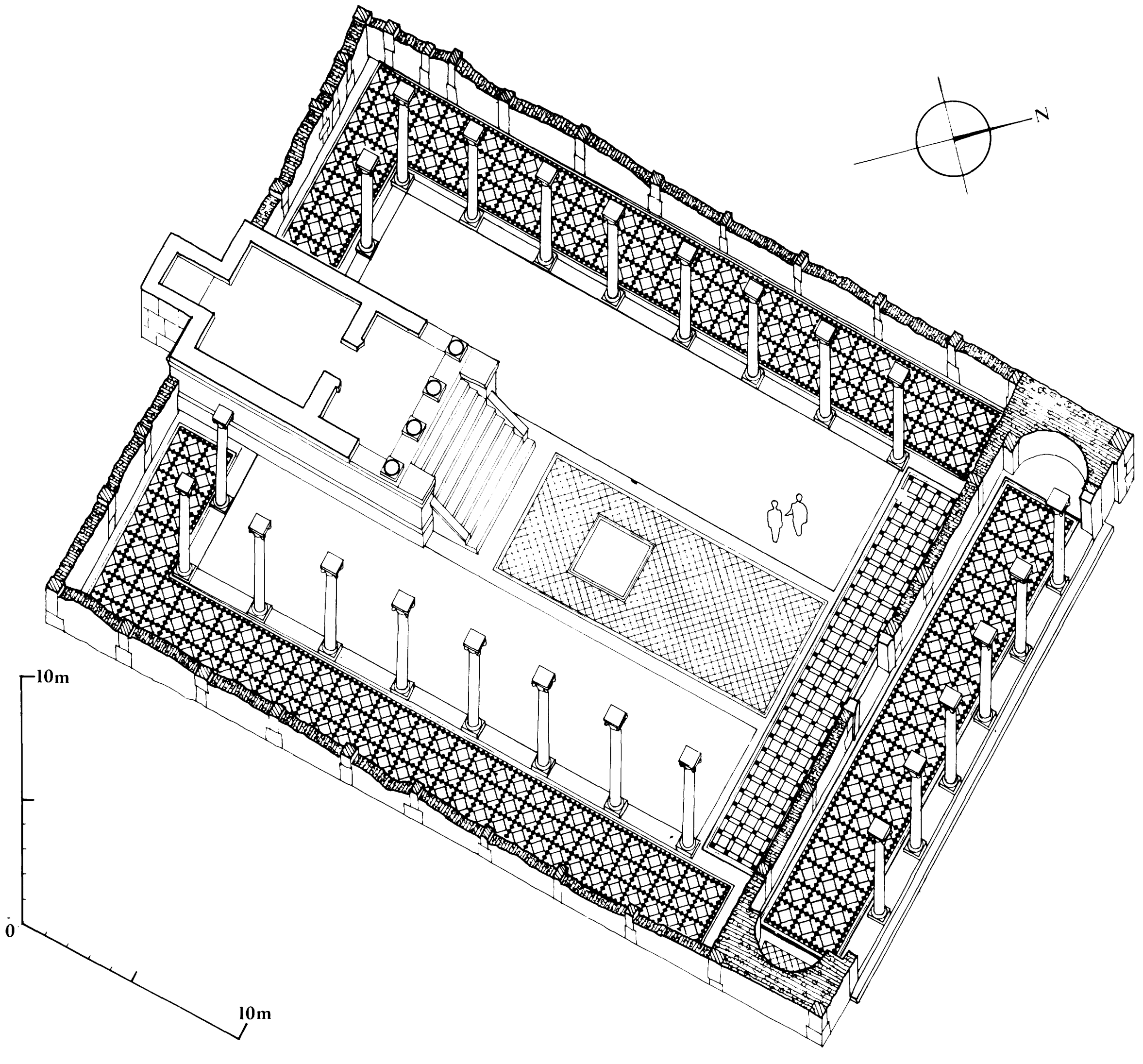

Fig. 13. East Temple, Thuburbo Maius, axonometric view. (S. Gibson and C. Peirce, courtesy *CMT*)

material in ancient Roman gardens was extremely limited, but the major plants were evergreen and produced beautiful gardens in every season, welcome in winter, and refreshingly cool in summer. The plant material available was limited for the most part to the laurel, myrtle, rosemary, laurustinus, oleander, acanthus, ivy, and box.[23] All of these, except the box, so popular in Roman formal gardens, were native to Tunisia[24] and could have been used in ancient Tunisian gardens. The myrtle (*Myrtus communis* L.) was widespread and probably the most common shrub. It was desirable in the home garden, because of both its sweet-scented white flowers and its attractive black berries. It is also very drought-resistant. Cato (*Rust. Orig.* 8.2) listed the myrtle as one of the plants that should be grown for crowns and garlands. The berry was used to make both wine and oil (Pliny *HN* 15.118; Columella *Rust.* 12.38). Pliny also says that the myrtle berry took the place of pepper, long before pepper was known in Italy. He goes on to say that it was still used in making myrtle sausage, and that the flavor of wild boar was improved by using myrtle

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[23] For a discussion of the ornamental plant material in ancient Roman gardens, see W.F. Jashemski and E. Salza Prina Ricotti, "Preliminary Excavations in the Gardens of Hadrian's Villa: The Canopus Area and the Piazza d'Oro," *AJA* 96 (1992) 593–95.

[24] Box (*Buxus sempervirens* L.) is not included among the indigenous plants of Tunisia in G. Pottier-Alapetite, *Flore de la Tunisie, Angiospermes-Dicotyladones* I: *Apetales-Dialypetales* (Tunis 1979); II: *Gammopetales* (Tunis 1981); or in J.A. Battándier and L.C. Trabut, *Flore analytique et synoptique de l'Algérie et de la Tunisia* (Algiers 1902), nor is it found in Tunisian gardens today.

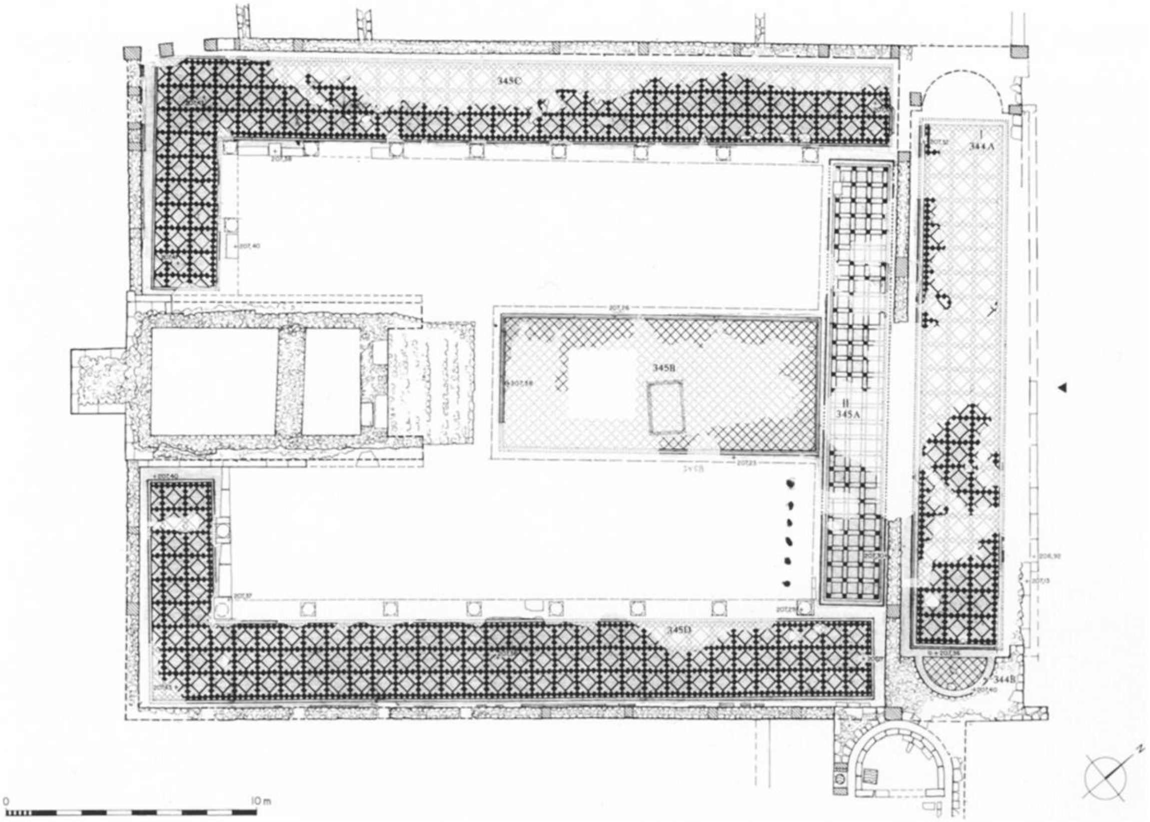

Fig. 14. Plan of the East Temple, with location of roots indicated. (S. Gibson and C. Peirce, courtesy *CMT*)

berries (*HN* 15.118). Myrtle berries were used frequently by Apicius, especially in sauces for meat, fowl, and fish dishes (2.1.7; 6.3.1; 6.5.1; 7.5.3; 7.6.7; 8.1.3; 10.3.8), and also to preserve turnips (1.12.8). The myrtle was also valued for its medicinal properties (Dioscorides 1.155).

Rosemary (*Rosmarinus officinalis* L.) is an attractive aromatic garden shrub with small lilac flowers. It too was used for making crowns (Dioscorides 3.89) and it also had many medicinal uses (Pliny *HN* 24.99–100; Dioscorides 3.89).

The laurel (*Lauris nobilis* L.) was desirable in home gardens, even though it required a little more water than other plants. We have seen that Mago gave directions for growing it. It was a source of bay leaves for cooking, and its black berries as well as the laurel shoots were also favored by the cook (Apicius 7.4.1; 7.5.2; 8.1.10; 8.6.11; 8.7.9). Its leaves were used in making crowns and frequently figured in the mosaics. It also had medicinal qualities (Dioscorides 1.106). The laurel can be grown as a shrub, or as a tree up to 30 ft high, and may have been one of the shrubs or small trees planted in this garden.

The laurustinus (*Viburnum tinus* L.) is another beautiful garden shrub, with desirable clusters of white flowers and, later, bright blue berries (Pliny *HN* 15.128–29). It too would have required watering. The herbaceous acanthus (*Acanthus mollis* L.) might have been used in this garden. Pliny (*HN* 22.76) speaks of it as an ornamental plant for city gardens. The Tunisian acanthus is especially handsome, with its striking tall spikes of very large white, purple-veined flowers. It is often seen in Tunisian gardens today, as well as growing in the wild. It is evergreen in Tunisia. It, too, had medicinal uses (Pliny *HN* 22.76). Ivy, so popular in Roman gardens, although indigenous to Tunisia, may not have been much used because of its need for watering. There does not seem to be a place for it in this garden.

Roman gardens had few flowers, especially with color. Roses are pictured in the mosaics, and they might have been planted in this garden. The oleander (*Nerium oleander* L.), with its striking pink flowers, is the only colorful garden shrub. It is widespread in all Tunisia. We can imagine that oleanders, so prominent in modern Tunisian gardens, as well as in the wild, added color to this garden. It is tolerant of variable growing conditions. Oleander thrives along the waddies, but also adapts easily to drier conditions.

THE EAST TEMPLE

We also found evidence for a temple garden. A strip of soil bordered most of the long sides of the East Temple and the mosaic paving in front of it (fig. 13).[25] Our preliminary excavations in a strip 1 m wide at the front of the garden on the left (fig. 14) yielded a row of root cavities approximately 15 cm in diameter and 50–70 cm apart, suggesting a formal planting. The size of the root cavities indicates that trees, or large shrubs, perhaps laurel, were planted there. Temple gardens and groves are well known in the ancient world but primarily from literary evidence;[26] there is practically no archaeological evidence.[27] For this reason, the complete excavation of both plots of soil in the East Temple is extremely important. It could reveal exciting and very significant information, perhaps rows of plantings such as are indicated in several gardens in Rome on the Forma Urbis.

The great importance of Tunisia as a fertile site for the further study of Roman gardens cannot be stressed too much. It is imperative that these gardens be carefully excavated before the evidence is destroyed. Slowly the gardens of Tunisia are yielding their secrets, but they have much yet to tell.

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Appendix: Soils of Thuburbo Maius

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Pedologic studies have been useful in delineating and determining various aspects of the environmental history of archaeological sites. Soil morphology plays an important role in determining soil characteristics and understanding the impact of habitation on the soil-landscape system. Recently, chemical analyses have been found to be especially useful in evaluating the presence of Roman occupation at archaeological sites.[28]

The objectives of the pedologic investigation of Thuburbo Maius were to 1) characterize the morphological properties of soils in three Roman gardens and also adjacent areas of the present-day landscape, and 2) determine the diagnostic chemical characteristics of soils in Roman gardens.

Six soil profiles were described and sampled at Thuburbo Maius (fig. 1). Four of these profiles were associated with the Roman level; two profiles were sampled in the gardens in the House of Bacchus and Ariadne (G1, in the garden opposite the triclinium, and G2, in the peristyle garden) and two profiles in the East Temple (Te1 and Te2). One of the off-site profiles was on the modern soil surface north of the East Temple (Th1) and the other profile was taken in an agricultural (wheat) field northwest of the North Gate (F4).

Laboratory analyses included total carbon by dry combustion; pH by the glass electrode; and extractable ions by an ARL Model 3560 ICP/AES with 0.76M HCl/HNO3 as the extracting agent.

The soils at Thuburbo Maius were developed mainly in sedimentary rocks; the dominant rocks noted were limestone and shale. Many of the soils observed at the site, however, had been transported (e.g., by wind or water) and were disturbed by various sedimentary processes. Soils in the gardens are essentially accumulations of buried A horizons; thus, there is evidence of a continuing process of deposition and subsequent soil development in these gardens. Eolian processes are certainly active in this region, and this could account for some of the accumulation of soil material in addition to the anthropic influence.

The morphological properties of the soils in the garden opposite the triclinium in the House of Bacchus and Ariadne (G1) and in the agricultural field (F4) are shown in table 2.

The soil in the upper 90 cm in Profile G1 is mainly a series of buried A horizons (former surfaces). Many of the coarse fragments in the A horizons are artifacts rather than bedrock materials. The soil profiles in both gardens are calcareous throughout. The soil

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[25] Alexander and Ben Abed Ben Khader (supra n. 7) nos. 344–45 and pls. I, III and IV.

[26] M. Carroll-Spillecke, "The Gardens of Greece from Homeric to Roman Times," *Journal of Garden History* 12:2 (1992) 89–91; Jashemski I, 156 and 351 n. 2.

[27] For planting holes cut into the rock around the temple at Gabii, 12 miles to the east of Rome, see H. Lauter, "Ein Tempelgarten?" *AA* 1968, 626–31. For similar cuttings around the Temple of Hephaistos above the Athenian Agora, → D.B. Thompson, "The Garden of Hephaistos," *Hesperia* 6 (1937) 396–425.

[28] J.E. Foss, "The Soils of Hadrian's Villa," in Jashemski and Salza Prina Ricotti (supra n. 23) 595–97; and Foss, "Preliminary Analysis of Soils of Hadrian's Villa," in E. Salza Prina Ricotti, "Il sistema di irrigazione della Piazza d'Oro," *RendPontAcc* 62 (1989–1990) 151–57.

Table 2. Morphological Properties of Soils in the Garden opposite the Triclinium in the House of Bacchus and Ariadne (G1) and on a Field Site outside the Immediate Archaeological Area (F4)

Horizon	Depth (cm)	Color	Texture	Consistency	Boundary
*Profile G1**					
Ap	0–10	10YR 4/4	loam	friable	abrupt, smooth
2A/C	10–20	10YR 5/4 2.5YR 4/6	loam	friable	abrupt, smooth
3Ap1	20–40	10YR 4/3 7.5YR 4/6	loam	friable	clear, smooth
4Ap2	40–60	10YR 4/3	loam	friable	clear, smooth
4Ap2	60–90	10YR 4/3	loam	friable	abrupt, smooth
4C	90–110	10YR 6/3 2.5Y 5/6 coatings	loam silt loam	friable very firm	–
*Profile F4***					
Ap	0–10	10YR 4/4	clay loam	firm	clear, smooth
AB	10–25	7.5YR 5/6	clay loam	firm	clear, smooth
Bt1	25–40	7.5YR 5/6, 4/6	clay	very firm	clear, smooth
Bt2	40–60	7.5YR 4/6	clay	very firm	gradual, smooth
BC	60–100	7.5YR 4/6 5Y 5/3 (20%)	clay	very firm	gradual, smooth
CB	100–110	5Y 4/3, 5/3	clay	very firm	–

* Platy, rock structure (shaly) at 90–110 cm; artifacts noted throughout the upper 90 cm; many coarse fragments throughout profile; shale fragments at 90–110 cm; soil described from auger samples.
** Many artifacts in upper 10 cm; many, thin clay coatings in Bt and BC horizons; numerous coarse shale fragments throughout profile; soil described from auger samples.

described above in the garden opposite the triclinium in the House of Bacchus and Ariadne is similar to those observed at the East Temple in that they are composed of a series of buried A horizons and are of comparable texture.

The soil sampled on a landscape outside the archaeological site, however, contrasts sharply with those of the gardens (table 2). The soil is well developed with a strong argillic (clayey Bt) horizon and clay or clay loam textures throughout. It is obvious that this soil had not been disturbed and, except for some erosion resulting from agricultural practices, is typical of upland soils of the region. This soil profile is also calcareous and contains coarse fragments throughout; artifacts were only found in the upper 10 cm of the profile. In the area around Thuburbo Maius, a petrocalcic horizon (caliche) was noted at several locations. The hard underlying material of the soils at the East Temple is believed to be a petrocalcic horizon.

The chemical properties of the soils sampled are shown in table 3. The pH values of soils at all locations ranged from 7.9 to 8.4. The strongly weathered soil in the agricultural field with an argillic horizon

Table 3. Chemical Characteristics of Soils Sampled at Thuburbo Maius

		µg/g					
Soil Profile	pH	As	Cu	Ni	P	Pb	Zn
Roman level							
Garden (G1)	8.2	10.8	19.5	4.5	5327	47.8	39.4
Garden (G2)	8.1	11.9	21.0	4.9	6909	52.1	36.3
Garden (Te1)	8.1	10.0	12.2	3.9	5092	34.2	29.5
Garden (Te2)	8.0	2.1	13.4	5.6	6833	57.8	48.4
Present-day surfaces							
Thuburbo (Th1)	8.4	7.5	8.9	3.9	2964	21.5	18.1
Field (F4)	8.2	3.9	2.5	2.5	313	8.7	4.5

Note: The values are means for the different horizons of each profile; µg/g is similar to ppm.

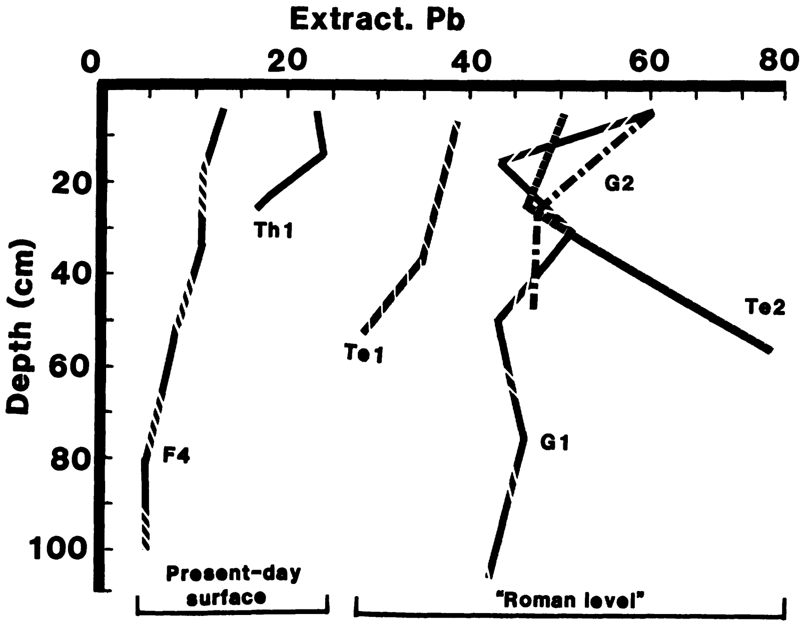

Fig. 15. Distribution of extractable lead (μg/g) with depth in soil profiles at Thuburbo Maius

had pH values similar to those in the gardens; it appears that additions of carbonates have occurred in these soils. Eolian dust from areas to the south seems to be the likely source of these carbonates.

Soils in the gardens are consistently higher in extractable arsenic (As), copper (Cu), phosphorus (P), lead (Pb), and zinc (Zn) than the soil outside the site. For example, the average extractable Pb content of the garden soils is 47.9 μg/g, while the soil off-site averages 8.7 μg/g. The present-day surface at Thuburbo Maius has intermediate values of As, Cu, P, Pb, and Zn in comparison to the Roman level and the agricultural field. Thus, some additions of these elements have taken place in the last few centuries and also

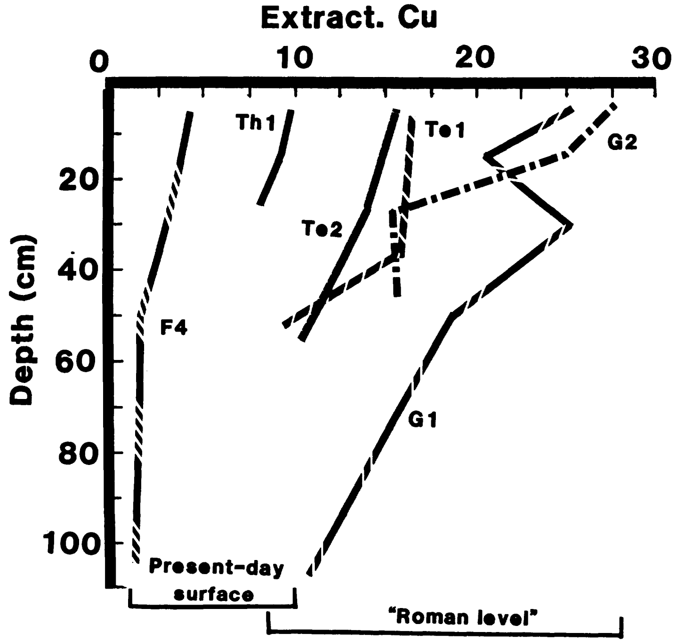

Fig. 16. Distribution of extractable copper (μg/g) with depth in soil profiles at Thuburbo Maius

possibly some mixing with soils that were exposed during the Roman period.

The distribution of extractable Pb with depth in the soils is shown in figure 15. In the modern-day surfaces, the Pb content generally decreases with depth, whereas soils at the Roman level show various distribution patterns. Figure 16 is a similar plot showing extractable Cu with depth in the soil profiles. Again, the level of Cu in the Roman-level soils is consistently higher than that of the modern-day surfaces.

In summary, soils in the gardens are characterized by a series of buried A horizons resulting from continued accumulation of sediment during occupation of the gardens. The Roman-level soils have higher contents of extractable As, Cu, P, Pb, and Zn than soils of present-day surfaces. The higher contents of these elements are undoubtedly related to the activities of the inhabitants during Roman times, but the particular activities that contributed to the high levels of heavy metals in these soils are unknown at this time.

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